



# CITY OF NIŠ STRATEGY FOR SAFETY

May, 2010.

The Strategy is developed with assistance of:





City of Niš Strategy for Safety is the result of a joint effort of the City of Niš, Working Group and the Team of Consultants from the Faculty for Occupational Safety in Niš. The development of the Strategy has been supported by **USAID's** Preparedness, Planning and Economic Security Program (PPES).

The methodology applied during the process of Strategy development has a participatory approach. The round tables and the participatory workshops have been organized in each phase of Strategy creation.

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## MESSAGE FROM THE MAYOR

*Dear fellow citizens,*

*Before you is a City of Niš Strategy for Safety, developed in accordance with European methodology and models. Its purpose is to find a best avenue to bring City of Niš level of security closer to great Cities of Europe.*

*This strategy is one of the main prerequisites to make Niš a safe City.*

*Vision of the Strategy is economically, social y and environmentally safe City of Niš that is permanently improving its institutions for promotion of safety, acting proactively and properly resolves risks and threats to the security for a purpose of increasing the quality of life of its citizens .*

*City of Niš with its undeveloped infrastructure, degraded industry, neglected ecology, and impoverished social policy has a need for such a strategy that will in an adequate way find resolution for all social, economical, ecological problems and also the ways for overcoming emergency situations.*

*I believe that we will succeed to move Niš and include it in current world tendencies and make it a City with great perspective – City of Future. Also I believe that this strategic document will bring numerous partners from the whole world, and also possibilities for large investments and material assistance. In this way a lot of job opportunities will be created.*

*Basic task of the Safety Strategy is to face the problems that are endangering the safety of the City and to optimally utilize the precious resources, values and potentials that allow the overcoming of these problems.*

***Thinking of a City as a property of great importance for all that live and work in it, we expect that also you, citizens of Niš, and professional audience, help to really put this document in life through realization of specific projects of interest for all of us. I believe that we will succeed to make Niš as safest City as possible. City where everyone will feel economically, socially and ecologically safer. City that will with its unique system of protection and rescue mitigate and remove risks, threats and consequences of emergency situations. Niš as safe City will attract foreign investments and enable to make it a City of future.***

**Miloš Simonović, MSc**

**Mayor of City of Niš**

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***CITY OF NIŠ STRATEGY  
FOR SAFETY***

***INTRODUCTION***

***Section 1***

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City of Niš as a union of its residences with five Municipalities represents a complex entity, where the Municipalities differ in many characteristics: size, structure of the share in industrial activity, achieved level of urbanization, way and style of life, etc. Regardless on all of these differences the common goal is to increase the quality of life of citizens and that assumes, besides the increase of living standard level, also the satisfaction of existential, social and ecological needs.

Therefore as one of strategic directions of developments in City of Niš Development Strategy is stated balanced and comprehensive improvement of the quality of life in the City, to create motivating and safe environment where the citizens will be able to explore and satisfy their needs to work, belong and have identity, socialize and personally develop in a safe environment.

Preparation process for City of Niš Development Strategy had:

1. Integral and participative approach
2. Cross sector cooperation and information exchange
3. Involvement of the public, private and civil sector.

During the development of the Documents we had in mind all relevant documents and research results of United Nations, European Union, Government of Republic of Serbia, private sector, professional and non-government organizations that are directly or indirectly relating to safety issues.

Primary goal during development of the Strategy is to define the vision of a safe City and a way forward on a City level, based on solidarity and responsible coexistence of citizens, in order to fully utilize economical, social, and ecological and safety in emergency situations.

Main goals of City of Nis Safety Strategy:

- Safety evaluation within the City Municipalities and on the City level
- Establishing causes for safety violation
- Assessing the most endangered groups
- Assessing the risk area
- Defining the strategic goals in achieving safety in accordance with global, national and local interests and potentials
- Defining the role of local Municipality in achieving safety
- Establishing priority activities and projects for elevating the safety level
- Organizing the competent services in conditions of violated safety.

Basic guidelines for development of the Strategy:

- International Acts adopted by the United Nations and European Union (Rio Declaration, Johannesburg Declaration, Millennium Development Goals, European Declaration on City Rights)
- National Acts (Legal regulation and National Strategies)
- City Development Strategy





**CITY OF NIŠ STRATEGY  
FOR SAFETY**

***Analysis of the Safety Situation  
in the Territory of the City of Niš***

**Section 2**

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## 1. ECONOMIC SECURITY

### INTRODUCTION

Even until today the index of economical security (IES) has not been developed. **Economic security** is a state where there are no threats in realizing basic rights, right to work and be employed, profit that allows satisfaction of material and nonmaterial needs and development. This kind of definition makes gathering of necessary empiric information for review of achieved economical security harder. Basic reason is to broad definition.

Economical security is achieved by determining the causes of insecurity and providing ways for their solution. Thus this triple activity encompasses: *identification or critical threats, prevention of risks and mitigation of harmful consequences* when economical risks occurs. Therefore as a result an economical security creates "suitable environment" for human development.

Economical security is reflected through:

- Employment,
- Certainty of work place
- Safe working condition,
- Income equality
- Minimal or no inflation
- Developed network of social insurance.

In a City of Niš Strategy for Safety the evaluation of economical security has been analyzed through following sub-areas: production, commerce, transport, labor and unemployment.

For each sub-area special indicators have been established that allow the overview of economical security in City of Niš.

SUB-AREA	INDICATORS
PRODUCTION	National income Net income per employee Tendencies of industrial production Ownership capital structure
COMMERCE	Balance of trade in goods and services Retail prices Cost of life index
TRANSPORT	Transport Network Trade in goods and services
SUB-AREA	INDICATORS
LABOR AND UNEMPLOYMENT	Employment per sectors Structure of the employees per ownership sector Structure of employees per sector of activity Unemployment of persons per their education

Basic information sources for analyses of the economical security in the City of Niš were:

- City of Nis Development Strategy<sup>1</sup>, City of Nis Local Economy Development Study,<sup>2</sup> City of Nis Small and Medium Enterprisers and Entrepreneurship Development Strategy for a period from

<sup>1)</sup> City of Nis Development Strategy, Nis, December 2007

<sup>2)</sup> City of Nis Local Economy Development Study, Nis, December 2005

2009 to 2013,<sup>3</sup> Republic of Serbia National Strategy of Sustainable Development,<sup>4</sup> Strategy of Economical Development of Rural Regions – Economical Rural development, in the City of Nis area in a period from 2007 to 2010,<sup>5</sup> Statistical yearbook of City of Nis,<sup>6</sup> Statistical yearbook of Republic of Serbia,<sup>7</sup> Municipalities in Serbia,<sup>8</sup> State of the human activities in Serbia – report for 2005 – 2006 year,<sup>9</sup> Indicators of human security in Serbia – report for 2004,<sup>10</sup> Human security.<sup>11</sup>

## 1.1. PRODUCTION

One of the most relevant indicators for evaluation of economic results of an economy or a region is economic growth tempo. Namely, it shows the level of speed at which the economy of a region leaves one development stage and enters the new one.

### 1.1.1. National Income

National income represents newly created value during the year. The calculation of national income is based on the concept of material production.

The calculation for municipalities encompasses all material production activities together with production services operating on the territory of a municipality. The calculation includes data for all companies that fully operate in the municipality and data for business units operations of the companies with central offices in other municipalities. (Table 1, Diagram 1).

National income for the analyzed period has been constantly increasing in value for the whole period. In 2004 the national income has increased significantly. This way, the increase of national income in 2004 was for 12 billion of dinars higher comparing to year 2003. However, the increase in 2005 comparing to 2004 was only a little over 2.2 billion of dinars. This data indicates that the realization of economic activities has significantly decreased in the City of Niš which therefore reflected on the total of the following income in 2005. The City of Niš participates with 4,02% in creation of total Serbian national income.

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<sup>3)</sup> City of Nis Small and Medium Enterprisers and Entrepreneurship Development Strategy Draft for a period from 2009 to 2013

<sup>4)</sup> Republic of Serbia National Strategy of Sustainable Development, ("Official Gazette of RS ", no. 57/2008), Belgrade

<sup>5)</sup> Rural Economic Development Strategy in the Territory of City of Niš for the period 2007 -2010. Niš, 2006.

<sup>6)</sup> Statistical Yearbook of the City of Niš, City of Niš, Administration for economic, sustainable development and environmental protection - Department of statistics, Niš.

<sup>7)</sup> Statistical Yearbook of Serbia, Statistical Office of RS, Belgrade

<sup>8)</sup> Municipalities in RS, Statistical Office of RS, Belgrade

<sup>9)</sup> Situation of human activity in RS - report for 2005 – 2006. Fund for Open Society, Belgrade, 2007.

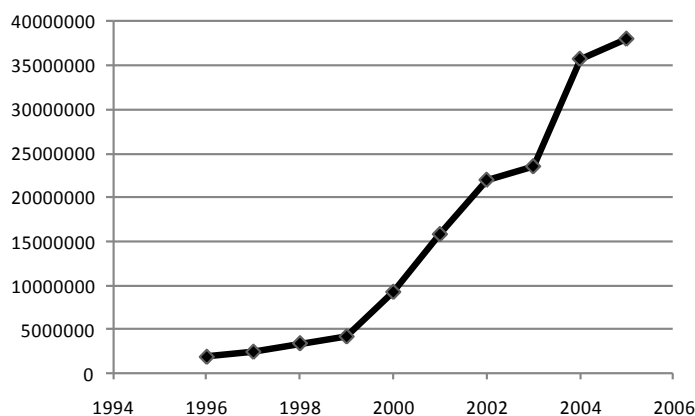
<sup>10)</sup> Indicators of human security in RS -reports for 2004, Faculty of Civil Defense, Belgrade, 2005.

<sup>11)</sup> Vindzpoz, Human security, compilation of texts 1- human security. Fund for Open Society, Belgrade, 2006.



**Table 1.** Total national income in the period 1996 - 2005.

Year	Total (in thousands of dinars )
1996	1874025
1997	2447008
1998	3410206
1999	4185970
2000	9245483
2001	15798950
2002	21964017
2003	23497852
2004	35693779
2005	37974652

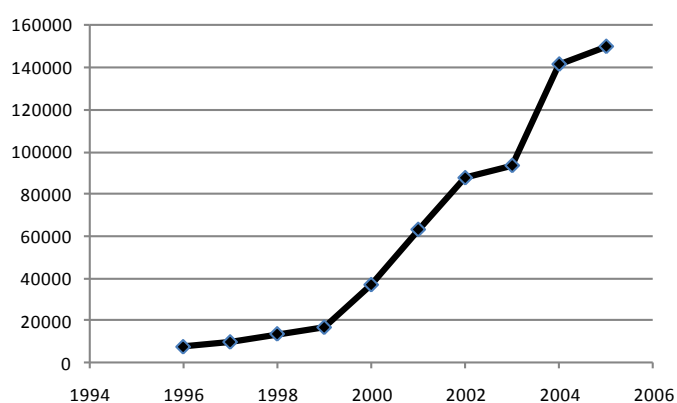
**Diagram 1.** Total income flow in the period 1996 – 2005 (in thousands of dinars)

### *Per Capita National income*

Per capita national income represents the ratio between total income and number of habitants and is used as one of the basic indicators for determining development degree of the territory it is calculated for. (Table 2, Diagram 2).

**Table 2.** Per capita national income in the period 1996 - 2005.

Year	Per capita (in dinar )
1996	7443
1997	9718
1998	13559
1999	16670
2000	36908
2001	63120
2002	87646
2003	93482
2004	141568
2005	149971

**Diagram 2.** Per capita national income flow (in dinars)

Per capita national income during the observed ten year interval indicates that it has been significantly increasing in the period from 1996 as a base year when it was 7.443 dinars to 2005 when it reached the value of 149.971 dinars. However, the increase in 2005 comparing to 2004 amounted only a little over 7,000 dinars. This unfavorable trend is a result of both total national income decrease and increased number of habitants in the City of Niš during this period. Estimated number of habitants in the City of Niš in 2005 was 253,214 which make 3.3 % of total population of Republic of Serbia, i.e. 65.6% of total population of Nišava County. During last 50 years, the population increased for 2.3 times and population in the city center itself for even 3.5 times. This increase is, above all, a result of migration movements in the region and in the country.

**National Income by Type of Property**

The calculation of national income for public property, private companies, cooperate, mix and state property is based on data from economic companies' annual financial statements that are collected and processed based on the territorial principal and "clean industries" principal. The calculation for private property (privately owned households and stores) is based on the special research and partially on the estimates. (Table 3, Diagram 3).

**Table 3.** National income by type of property in the period 1996 - 2005

Year	Total (in thousands of dinars)	By type of property				
		Public property	Private property	Cooperate property	Mix property	State property
1996	1874025	946287	493816	9757	424165	-
1997	2447008	1128986	712013	7921	598088	-
1998	3410206	1333798	961859	19297	997042	98210
1999	4185970	1626804	1403557	55624	1004866	95119
2000	9245483	2696445	3163491	135503	2310117	939927
2001	15798950	6867222	5227069	133592	3723415	-152348
2002	21964017	7975843	7676401	156871	5810664	344238
2003	23497852	2343552	9055794	119435	10907094	1071977
2004	35693779	2749951	12630785	132474	18097455	2083114
2005	37974652	576699	31253037	90891	2760533	3 293 492

National income deriving from the sector of public property has been decreasing during last years as a result of transitional processes and economy restructuring. Public property share in realization of national income, expressed in absolute amounts, has been increasing until 2002 when it reached the value of 7,975,843,000 dinars. However, public industries national income share within total national income has been decreasing from year to year. Starting with 1996, the national income share realized through public property, comparing to total national income, was 50.5% when, starting from the following year it started to constantly decreasing so that in year 2005 it reached the minimum value of only 1.5%.

On the contrary, national income deriving from the private sector increases both in absolute values with the starting 493,816,000 dinars in 1996 up to even 31,253,037,000 dinars in 2005 and in percentages. Private sector national income share within total national income in 1996 was 26.4 % and its share in 2005 was as high as 82.3 %. This trend is above all, a result of ownership transformation – privatization in the City of Niš during last year's.

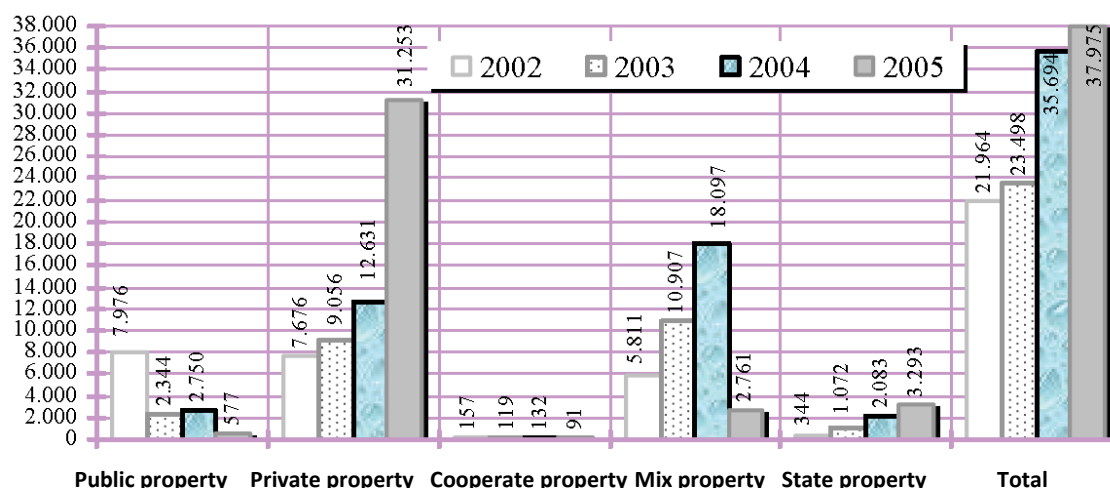


Diagram 3 National income by type of property (million dinars)

### National Income by Sector

Calculation of national income is based on the concept of material production and according to this principal the calculation of national income for the period 1994 - 2001 includes the following sectors (Table 4):

- Industry and mining
- Agriculture and fishing
- Construction industry
- Traffic and communications
- Commerce
- Catering industry and tourism
- Other

Table 4 National income by sector for the period 1994 – 2001 (in thousands of dinars)

Year	Total	Industry and Mining	Agriculture and Fishing	Construction Industry	Traffic and Communications	Commerce	Catering Industry and Tourism	Other*
1994	649250	207148	52616	46084	...	146392	13746	183264
1995	1339630	710136	75988	54779	...	205540	26199	266988
1996	1874025	613439	132676	104167	...	389688	49506	584549
1997	2447008	799618	182018	165778	...	439611	46554	813429
1998	3410206	965028	220556	186783	652532	859598	65257	460452
1999	4185970	1122304	276067	211694	702182	1157534	117301	598888
2000	9245483	2117307	786124	475788	1517910	3025918	166419	1156017
2001	15798950	7963878	1290439	885278	805553	2602426	271350	1980026

\* Water management, crafts industry, utility services, technical and business services, publishing industry, film industry and pharmacies.

When analyzing the economic structure of the City of Niš it becomes obvious that tertiary sector participates with the highest percentage in realization of national income and then industry and agriculture with lower percentage.

General level of the City of Niš industry production is low so that in 2004 comparing to 1990 it was 45%. The biggest decrease of the physical volume of industrial production happened in 1997, when it was - 37% and in 1999, - 25.6%. In the period 1994 - 1998 the industrial production was insignificant.

Light industry takes the dominant place in generation of national income with 38.7% in 2004. It kept similar percentage in 2005.

The industry of agricultural products processing, raw materials and equipment for agricultural production is very developed in the City of Niš. There are more than 30 so-called agricultural companies in the City of Niš.

Agriculture is a very significant segment of the economic activity as a whole since it participates with 4.65% in realization of total national income of the City of Niš while at the level of the Republic the participation of agriculture in realization of the national income is significantly higher and it is 17.27%.

Total agricultural land on the territory of the City of Niš is 36.996 ha, out of which 31.921 ha (86.3%) is privately owned. Average household is approximately 3 ha large. Besides that, there are a lot of tiny private farms that are usually consisted of a few parcels of an average size of 5 ha.

Of all agricultural land, 58.6% are cultivated fields, 5.3% are orchards, 10.6% vineyards, 5.1% meadows and 20.4% pastures. Cultivated land makes approximately 2 ha of an average privately owned farm. Second, third, fourth and fifth class of fertility of a plot of land dominates.

Basic comparative advantage of the City of Niš supply of land is:

- Diversity by types
- Altitude
- Way of exploitation
- Non-contamination of soil

These advantages may be used for the shortest and the most efficient conversion from conventional to organic agricultural production.

In 2005 production of plants was as follows: 10.990 t of wheat, 16.675 t of corn, 3.57 t of clover and 7.610 t of Lucerne.

Agricultural mechanization on the territory of the city consists of: 7000 tractors, 14000 single-axis self-propelled machines, 130 harvesters, 1000 irrigation pumps, etc.

Two basic characteristics of agricultural mechanization are:

- Extremely old – over 20 years average and depreciation of machines
- Even 99.5% of mechanization is privately owned

The value of finished construction works in Niš comparing to Republic of Serbia value in 2004 was 3.6% and the value of housing construction was 4.93%. In 2004, 845 apartments were built in Niš (16,388 in the Republic of Serbia) and 1,021 apartments in 2005 of a total floor surface of 62,541 m<sup>2</sup>. Number of apartments built in 2004 in Niš per 1000 citizens was 3.4 and in 2005 it was 4.3.

Calculation of national income is based on the conception of material production and according to this principal the calculation for the period 2002 – 2005 encompasses the following industries (Table 5):

- Agriculture, hunting, forestry, water management
- Ore and stone mining
- Processing industry

- Producing and supplying of electric energy, gas and water
- Construction industry
- Commerce (retail and wholesale) and repair
- Hotels and restaurants
- Traffic, storage and communications
- Real estate and rental activities
- Healthcare and public welfare
- Other utility, public and personal services

In 2004 number of companies in Niš was 2,484 which represents an increase of even 84% comparing to number of companies in Niš in 1990 when this number was only 532. Anyway, the number of companies in Niš makes 3.3% of total number of companies in Serbia.

Public sector participated with 4.6% in total number of companies of Niš economy in 2004 and with 9.1% of a total local economy income. Public sector participates with 13.7% in the total property value of the local economy.

Total of 2,045 (87.1%) companies operate within private sector of the City of Niš and their participation in the total income is 59.6%. The increased number of privately owned companies in the total number of companies is a result of a fast privatization process during the last years. (Table 6)

**Table 5** National income by industry in the period 2002- 2005 (in thousands of dinars)

Activity	Year			
	2002	2003	2004	2005
Agriculture, hunting, forestry, water management	1526829	1428672	1657896	1468464
Ore and stone mining	21101	38013	15415	14438
Processing industry	9442221	8433307	13799043	18647175
Producing and supplying of electric energy, gas and water	320696	1267663	1429075	1181515
Construction industry	1198497	1557977	2293851	1927630
Commerce (retail and wholesale) and repair	5671532	6808247	9596364	8897140
Hotels and restaurants	489471	683638	898570	769872
Traffic, storage and communications	2549920	2333171	4457285	3701749
Real estate and rental activities	696556	876066	1435617	1268073
Healthcare and public welfare	47020	65675	100448	87142
Other utility, public and personal services	174	5423	10215	11454
<b>Total:</b>	<b>21964017</b>	<b>23497852</b>	<b>35693779</b>	<b>37974652</b>

**Table 6** Business companies by property sector in 2006

Sector	Number of privatized companies
Industry and mining	521
Construction industry	183
Commerce	178
Agriculture and fishing	104
Financial and other services	100
Craftsmanship	89
Catering industry and tourism	78
Traffic and communications	61
Education and culture	12
Utility company	7
Water management	6
Socio-political communities and organizations	4
Healthcare and public welfare	1
<b>Total</b>	<b>1344</b>

Most of the privatized companies are from industry and mining (521), construction (183) and commerce (178).

In a period from 2000 to 2004 number of Small and Medium Enterprises (SME) has been constantly increasing in Niš and Serbia. In 2004 in Niš County there were 2327 small and medium enterprises, which makes 99.1% of total number of companies in Niš. Dominant sector of small enterprises in Niš is in commerce) 46.71% and industry (25.92%). Dominant sector of medium enterprises in Niš is industry (46.07%) and commerce (26.92%). In 2005 there were more than 7300 shops that were operating in Niš, which makes 2.54% of total number of shops in Serbia.

#### 1.1.2. 1.1.2. Net income per employee

Income according to the Labor Law is “made from income that includes tax and contributions that are paid from the income that an employee has generated for performed labor and time spent on labor, than the increased income, benefit income, and other income except the reimbursement of the expenses of coming and returning to and from work, for the time spent on business trip in country and abroad, severance pay for retirement, soldiery assistance, jubilee awards, compensations for funeral expenses and compensations for injuries at work and occupational illness.”

**Table 7** Net income (wage) per employee in period from 1994 to 2007 (in RSD)

Year	Total	Industry	Non-industry
1994	160	154	188
1995	340	326	401
1996	596	562	721
1997	613	503	1047
1998	809	721	1140
1999	930	872	1138
2000	1816	1813	1823
2001	4996	4795	5679
2002	8367	7716	10391
2003	10795	10087	12641

<b>2004</b>	<b>13055</b>	12019	15525
<b>2005</b>	<b>15311</b>	13711	18728
<b>2006</b>	<b>18408</b>	16277	22658
<b>2007</b>	<b>23678</b>	19769	30954

During the analyzed period that is presented in a table 7, net income per employee had a following characteristic.

- Constant growths both of total net income in the City of Niš (more than from 160 to 23678 dinars), and in industry (from 154 to 18769 dinars), respectively non-industry (from 188 to 30954 dinars) and
- Net income was significantly higher in non-industry (30954) than in industry (19769).

### **Net income per type of activity**

Net incomes generated in 14 industry and non-industry activities in a period from 1994 to 2000 are presented in table 8.

Highest net incomes in 2000 in the City of Niš have been generated in the following activities:

- Forestry (3213 dinars),
- Traffic and communication (2758 dinars),
- Financial and other services (2413 dinars),
- Water management (2229 dinars) and
- Residential – utility companies (2027 dinars).

Lowest net incomes in the industry of the City of Niš have been generated in the following activities:

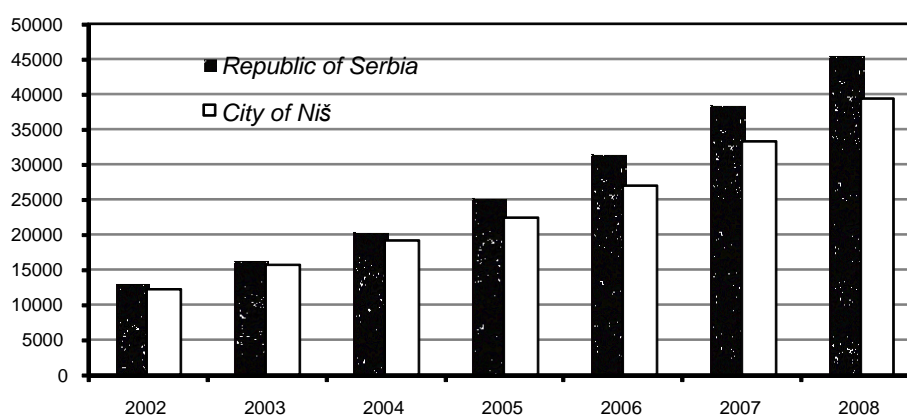
- Agriculture and fishing (433 dinars),
- Commerce (740 dinars),
- Catering industry (1066 dinars),
- Industry and mining (1721 dinars) and
- Craftsmanship (1750 dinars).

In non-industrial activities the highest net incomes have been generated in socio-political organizations and funds (2424) and the lowest in the education and (1442 dinars).

**Table 8** Net incomes (wages) per type of activities in a period from 1994 to 2001

	ACTIVITY	Year						
		1994	1995	1996	1997	1998	1999	2000
INDUSTRY	Industry and mining	155	305	485	402	613	785	1721
	Agriculture and fishing	119	254	424	225	444	188	437
	Forestry	136	405	890	844	1184	1211	3213
	Water management	147	271	494	610	716	1187	2229
	Construction	125	303	541	482	582	648	1843
	Traffic and communication	191	422	832	1008	1417	1536	2758
	Commerce	116	268	389	174	240	346	740

	Catering	118	244	424	382	531	482	1066
	Craftsmanship	179	415	623	498	771	989	1750
	Residential – utility companies	148	307	610	765	965	1177	2027
	Financial and other services	203	451	931	862	1243	1339	2413
<b>NON-INDUSTRY</b>	Education and culture	189	373	703	830	913	875	1442
	Health and social welfare	188	411	708	1180	1201	1241	1941
	socio-political organizations and funds	186	434	823	1089	1542	1432	2424



**Diagram 4** Average gross income (in dinars)

Average gross income per statistic records was in constant growth since 2002 up to 2008, together with the growth of the average gross income in the Republic. From Diagram 4 you can see that the difference in average gross income on Republic level has been increased through the years.

#### ***Incomes per sectors of activities***

Based on the information from the Table 9 you can see that the highest net incomes in 2007 in the City of Niš have been realized in the following activities:

- Financial intermediation (41358 dinars),
- Producing, supplying electrical energy, gas and water (38270 dinars),
- Health and social welfare (31861),
- State management and social insurance (31136) and
- Education (28716 dinars).

Lowest incomes in 2007 in the City of Niš have been realized in the following activities:

- Extraction of ores and rock (6682),
- Hotels and restaurants (11686 dinars),
- Construction (14725 dinars),
- Processing industry (17605 dinars) and
- Commerce (17142 dinars).



**Table 9** Incomes per type of activities

Activities	Year						
	2001	2002	2003	2004	2005	2006	2007
Agriculture, forestry and water management	2967	7546	10417	11961	13626	21036	18755
Fishing	-	-	-	-	-	-	-
Extraction of ores and stones	5459	9865	10927	8793	6427	9513	6682
Processing industry	4242	6912	8982	10741	12235	14455	17605
Producing, supplying electrical energy, gas and water	7124	11810	15966	19380	23137	28361	38270
Construction	4909	8053	9413	10086	10233	12275	14725
Retail and wholesale commerce and repairs	3491	6321	9424	12216	12404	13874	17142
Hotels and restaurants	3061	5321	6891	7579	8470	8274	11686
Traffic, storage and communications	7444	10150	12774	14220	16076	19649	22963
Financial intermediation	8868	13834	18516	26425	31919	38210	41358
Real estate operations, renting	3753	6889	8549	10094	15840	22602	24105
State management and social insurance	8120	10584	14472	17301	20888	26882	31136
Education	4835	9323	11191	14161	17939	22064	28716
Health and social welfare	5560	10845	13009	16068	18750	21519	31861
Other utility, social and personal services	5206	9265	12524	13713	17130	20008	24031

## 1.2. COMMERCE

Economical tendencies in commerce can be, in a best way, observed through:

- Sale and buying up of agricultural products and
- Average retail prices.

### 1.2.1. Sale and buying up of selected agricultural products

Basic data for commerce in the City of Niš are:

- That a majority of companies has operated in commerce (46%),
- That commerce participates with 29% in national income structure and
- That commerce participates with 39.4% in total generated income of the City.

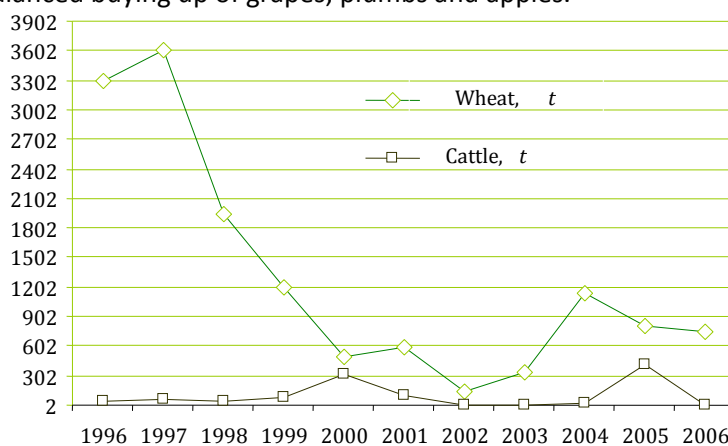
Sale and buying up of selected agricultural in a period from 1997 to 2006 have been presented in a table 10 and diagram 5.

**Table 10.** Sale and buying up of selected agricultural products in a period from 1997 and 2006.

Year.	Wheat	Corn	Pigs	Cattle	Eggs, in thousands	Milk in thousands of liters	Beans	Potatoes	Apples	Plums	Grapes
	In tones										
1997	3 617	-	44	62	38	-	0	-	36	104	4 840
1998	1 951	-	55	43	230	-	5	46	19	141	3 009
1999	1 194	4	35	90	94	11	1	-	4	6	-
2000	500	-	163	308	100	-	2	-	17	368	3 927
2001	597	-	126	93	177	-	1	-	3	65	2 415
2002	140	-	-	-	4	-	-	-	1	30	1 331
2003	331	-	-	11	-	74	-	-	-	-	-
2004	1 138	-	-	17	-	-	-	-	-	-	-
2005	815	-	987	407	-	212	-	-	-	-	-
2006	749	-	-	4	-	381	-	-	-	1 698	-

Basic characteristic of agricultural product sales and buying up are:

- Large oscillations in wheat buying up quantities,
- Small buying up quantities of potato, beans, corn, eggs and milk,
- Unbalanced buying up of grapes, plums and apples.

**Diagram 5** Sales and buying up of selected agricultural products

### 1.2.2. Retail prices

Average retail prices are presented for:

- Food products,
- Non-food products and
- Services

**Average prices of food products**

Average retail food prices in Niš in 2006 are shown in the table 11.

Particularly interesting fact is that the prices of domestic food products (macaroni, biscuits, prunes, marmalade, raw peas, sugar, etc), agricultural products (beef, pork, canned products, fish, etc) and dairy products (cheese, butter, milk, etc) have been increased.

In the same period there has been insignificant decrease of prices of some domestic products such as onion, cabbage, flour, grapes, etc.

The prices of imported products such as rice, coffee, and fish have been significantly increased.

**Average prices of non-food products**

Average retail prices of non-food products in Niš in 2005 and 2006 are shown in the table 12.

**Table 11** Average retail prices of food products in Niš in 2005 and 2006 (in dinars)

FOOD PRODUCTS	Unit	Price	
		2005	2006
Rise	kg	68,82	73,16
Bread made from wheat flour type 850	kg	39,50	40,00
Bread made from wheat flour type 500	kg	59,50	50,00
Wheat flour type 500	kg	26,42	24,67
Macaroni	kg	62,58	64,31
Biscuits	kg	148,41	154,92
Potatoes	kg	14,70	25,93
Beans	kg	99,08	110,03
Onion	kg	28,41	27,94
Carrot	kg	34,05	40,71
Fresh cabbage	kg	25,80	18,44
Apples	kg	41,17	42,07
Grapes	kg	71,90	65,61
Lemon	kg	80,28	85,42
Prunes	kg	125,58	198,08
Marmalade	kg	145,89	182,15
Jam	kg	123,07	184,57
Frozen peas	kg	104,27	131,20
Beef with bones	kg	318,22	321,52
Pork with bones	kg	339,00	341,52
Slathered chicken	kg	190,58	160,90
Smoked pork ribs	kg	252,18	262,27
Smoked pork neck	kg	676,77	766,64
Smoked bacon	kg	351,52	383,62
Ham	kg	318,14	337,98
Beef stew	kg	394,83	484,69
Meat breakfast	kg	463,00	409,04
Carp	kg	222,92	246,67
Sardines in oil	kg	466,92	465,68
Domestic white sliced cheese	kg	152,92	161,33
Yellow cheese	kg	442,43	398,19
Butter	kg	352,43	401,16
Pork grease	kg	67,87	133,85

Cooking oil	kg	76,29	80,64
Margarine	kg	119,13	147,11
Chicken eggs	pcs	6,36	4,74
Natural honey	kg	235,83	274,71
Sugar	kg	52,11	61,23
Coffee, fried	kg	430,97	472,15
Milk chocolate	kg	694,72	599,70
Salt	kg	21,93	22,92
Hungarian paprika	kg	476,36	553,67
Milk	l	29,00	32,78
Wine	l	103,55	83,88
Brandy slivovitz	l	226,93	286,44
Bottled beer	l	38,60	29,33
Brandy	l	389,82	414,78
Sparkling water	l	36,38	35,48
Fruit juice	l	76,97	61,31

**Table 12** Average retail prices of non-food products in Niš in 2005 and 2006 (in dinars)

NON-FOOD PRODUCTS	Unit	Price	
		2005	2006
Fabric for women's winter coats	m	624,50	624,50
Fabric for men's suits made of worsted	m	619,17	640,00
Fabric for women's suits	m		565,00
Linen fabric, 140 cm wide	m	199,50	199,50
Printed fabric	m	225,00	247,92
Damask for linen	m	339,33	367,50
Lining made of artificial silk	m	149,58	242,50
Men's suit made of worsted yarn	pcs	5,362,50	5.600,00
Men's shirt, 100% cotton	pcs	775,00	616,38
Men's shirt, combination of cotton and polyester.	pcs	585,00	606,38
Men's cotton undershirt without sleeves	pcs	203,00	203,00
Men's underwear with legs	pcs		281,50
Men's threadlike socks	pair	84,00	83,67
Women's polyester pantyhose	pair	54,96	60,00
Children's legging polyester socks	pair	92,00	60,00
Towel – terry	pcs	182,50	248,33
Blanket – cover, mixture	pcs		1.070,83
Linen for one person	pcs	1.395,33	957,50
Brocade quilt	pcs	1.505,00	886,67
Mattress	pcs	5.583,74	5.866,45
Multi-color, 100% polyester 3 x 2 m	pcs	3.830,23	4.582,77
Men's low shoes	pair	2.848,67	3.724,00
Woman's low shoes	pair	1.549,47	2.049,08
Children's deep shoes	pair	1.594,83	1.457,33
Worker's rubber boots	pair	533,00	570,25
Dining room furniture set	set		52.430,71
Fold up sofa	pcs	17.370,70	18.450,69
Two door kitchen cabinet, hanging	pcs	3.367,00	3.367,00
Television, 50-56 cm	pcs	13.542,45	13.381,40
Washing machine	pcs	21.030,87	19.595,28
Fridge	pcs	17.428,75	16.945,00
Dust vacuum cleaner	pcs	3.579,32	3.565,31
Galvanized range	pcs	10.757,75	11.287,50

Electrical range with automat	pcs	17.038,90	17.600,15
Electrical iron with thermostat	pcs	2.867,58	3.015,67
Light bulb, 60 watts	pcs	20,60	23,57
Galvanized pot, approx 3 liters	pcs		400,00
Deep plate made of porcelain	pcs	78,25	69,00
Cutlery for six persons	set	2.075,00	2.075,00
Water glass	pcs	28,00	30,00
Lignite	t		4.488,50
Firewood	m <sup>3</sup>	2.290,00	2.648,33
Soap	kg	296,82	310,20
Tooth paste, 60 gram tuba	tube	45,73	54,35
Washing soap	kg	118,03	154,23
Detergent for washing machine	kg	83,05	90,93
Shoe grease, 30 grams packing	Box	44,05	48,07
Antipyretic (Acetisal etc.) 20 tablets	box	13,56	14,83
Analgesic (Fenalgol etc.), 10 tablets.	box	27,07	29,51
Vitamin C, 20 tablets	box	16,33	17,80
Cough syrup	bottle	78,29	78,78
School notebook	pcs	14,93	16,14
Graphite pen	pcs	14,34	16,56
Writing pen	pack	312,37	321,78
Men`s bicycle	pcs	6.755,00	6.755,00
Outer car tire,	pcs	1.847,00	2.366,17
Gas petrol – D-2 (diesel fuel)	l	59,41	70,67
Petrol unleaded 95 octane	l	78,95	83,80
Engine lubricant oil	l	200,00	238,33
Solid brick	pcs	6,75	9,11
Tile	pcs	26,63	24,00
Cement	kg	7,53	8,00
Lime	kg	6,56	7,45
Plank	m <sup>3</sup>	12.936,00	16.168,39
Nails	kg	71,03	72,30
Concrete iron	kg	46,02	46,73
Roof paperboard	roll	395,30	469,33
Synthetic white paint, prime for wood	kg	156,46	164,96
Window glass	m <sup>2</sup>	419,67	556,58
Light switch for one light bulb	pcs	71,17	84,33
Axe	pcs	740,00	430,00
Hoe	pcs	415,00	467,50
Copper sulfate	kg	140,33	185,00

With most non – food products there has been an increase in price, and above all with the heating material (coal, wood, etc.) fuel (gas petrol, gasoline, etc.) accessories (shoes, boots, etc.) and chemical products (soap, toothpaste, detergents, etc.)

Reduction of price has occurred in electrical appliances (refrigerators, ranges, televisions, vacuum cleaners,...) and textile products (men`s suits, shirts, linens...).

#### **Average prices of services**


Average retail price in Nis in 2006 are presented in Table 13.

**Table 13.** Average retail prices in Niš in 2006 (in dinars.)

SERVICES	1. QUANTITY	PRICE	SERVICES	2. QUANTITY	PRICE
Water for households	m <sup>3</sup>	24,30	Men`s haircut		130,00
Trash removal	m <sup>2</sup>	2,58	Women`s fixed hair		250,00
Apartment heating	m <sup>2</sup>	37,00	Car repair (one working hour)	1 <sup>h</sup>	550,00
Sawing of men`s suit	pair	7.000,00	Movie ticket	ticket	150,00
Sawing of women`s dress		2.375,00	Theater ticket	ticket	180,00
Man`s shoe sole repair	pair	229,17	Football match ticket	ticket	100,00
Dry cleaning of men`s suit	pcs	812,50	Public transportation ticket	ticket	30,42

## 1.3 TRANSPORT

### 1.3.1. Transportation network

Niš is located on the crossroad of the Balkan and European roads. The territory of the City is cut by three major international roadways and railroad – several transport directions that are connecting Balkans with central and Western Europe, Vlaška depression and Pomoravlje with Adriatic, Aegean and Black sea are going through the City are of Niš<sup>12</sup>.

Niš is an intersection of the highest priority in Serbia. Namely, there various forms of transportation that are intersecting:

- Highway corridor,
- Railroad tracks and planned railroad tracks for high speed trains,
- Airport,
- Cargo handling centers,
- Optical fibers,
- Transit centrals,
- TV and CT transmitters,
- Power lines of 400 kW and other.

Information on the length of the interstate, regional and local roads in a period from 1997 to 2006 have been presented in a table 14.

Road network is 392 km long and its structure is made of: interstate roads (9%), regional roads (23%) and local roads (68%). All roads are with modern surface, out of which 91.7% is local roads and 88.8% of regional roads that fulfill the designated standards.

Main national and international roads are:

- Belgrade-Niš – South Morava and Vardar valley - Skoplje- Thessaloniki- Athens (E-75).
- Belgrade – Niš valley of Nišava and Marica rivers – Pirot – Sofia – Istanbul –Middle East (E-80).
- Niš –Toplica valley – Podgorica – Adriatic sea.

<sup>12)</sup> City of Niš development strategy

Besides the above-mentioned national and international transportation routes, there are 6 less developed systems of regional roads out of which the most important are:

- Niš-Kruševac-Čačak-Užice
- Niš- Zaječar- Negotin- Bulgarian and Romanian border.

Index of physical volume in cargo traffic in 2006 when compared to 2001 (index 100.0) were 212.8 for railroad transportations, 167.8 for ground transportation and 143.3 for pipeline transport, that tells us about the significant increase in volume of the cargo transportation<sup>13</sup>.

Portion of the railroad cargo transportation in total cargo transport in Republic of Serbia, in a period from 2002 to 2006 was 60 to 65%, and ground transportation about 12%. During 2007 and 2008 ground cargo transport reached 16% of total cargo transport.

**Table 13** Length of interstate, regional and local roads in a period from 1997 up to 2006. \*

Year	Total	Modern roadway	Interstate		Regional roads		Local roads	
			Total	Modern roadways	Total	Modern roadways	Total	Modern roadways
1997	<b>381</b>	333	57	57	73	62	251	214
1998	<b>381</b>	338	57	57	73	62	251	219
1999	<b>395</b>	355	36	36	90	80	269	239
2000	<b>389</b>	358	36	36	90	80	263	242
2001	<b>389</b>	358	36	36	90	80	263	242
2002	...	...	...	...	...	...	...	...
2003	<b>391</b>	359	36	36	90	80	265	243
2004	<b>391</b>	360	36	36	90	80	265	244
2005	<b>376</b>	353	36	36	83	83	257	234
2006	<b>382</b>	353	36	36	89	83	257	234

\* In total length of roads, like in interstate roads, the length of the highways was not calculated.

### **Registered motor vehicles and tractor attachment machines**

Number of registered motor vehicles and tractor attachment machines in a period from 2002 to 2006 are presented in Table 15.

**Table 14.** Registered motor vehicles and tractor attachment machines

REGISTERED MOTOR VEHICLES	YEAR				
	2002	2003	2004	2005	2006
Motorcycles	340	385	404	435	545
Passenger vehicles	50773	52745	55130	56940	57521
Special passenger cars	650	669	685	694	687
Busses	520	546	533	559	502
Cargo vehicles	2305	2537	2913	3158	3364
Special cargo vehicles	632	734	881	1007	1071
Utility machines	28	28	31	30	31
Tractors	103	105	95	101	107
Tractor attachment machines	328	354	380	397	403

<sup>13)</sup> Statistical yearbook of Serbia 2007, Bulletin – Traffic, stocking, connections, 2007

During the observed period in Niš there has been a significant increase of registration of passenger cars from 50773 in 2002 to 57521 in 2006, also registration of cargo vehicles has increased from 2937 in 2002 to 4435 in 2006.

At the same period there has been a significant reduction in registration of buses from 520 in 2002 to 502 in 2006

### 1.3.2. Transfer of goods and services

#### *Passenger transportation and inter city traffic*

Basic information on passenger transportation and intercity transport in a period from 1998 to 2007 is presented in Table 16.

**Table 15.** Passenger transportation and intercity traffic in a period from 1998 to 2007

Year	Number of buses	Number of seats	Traveled kilometers in thousands	Passengers transported in thousands.	Number of employees
1998	243	18503	29509	21712	800
1999	244	18528	23558	20139	817
2000	255	27208	30686	25176	834
2001	255	27208	31396	23110	876
2002	255	27208	29336	23240	872
2003	255	27208	30439	23345	880
2004	255	27208	29837	21153	904
2005	255	27208	29763	18015	921
2006	210	10710	24416	7571	673
2007	210	10710	24783	7450	666

International passenger transport has gone through significant reduction and that is presented in data on transferred passengers. Therefore, only in 1998 in intercity transportation there were 21,712,000 passengers transferred, and in 2007 only 7,450,000 passengers.

Besides this there has been a significant reduction in the number of employees from 800 in 1998 to 666 in 2007.

#### *City transportation*

Basic information on city transportation in a period from 1998 to 2007 is presented in Table 17.

**Table 16.** City transportation

Year	Number of buses	Number of seats	Traveled kilometers in thousands	Passengers transported in thousands.	Number of employees
1998	189	22 076	5 351	67 901	379
1999	189	22 076	4 414	49 814	396
2000	189	22 076	5 229	60 846	425
2001	189	22 076	5 364	56 667	448
2002	189	22 076	5 334	48 987	436
2003	189	22 076	5 376	40 360	445
2004	189	22 076	5 394	35 743	441



<b>2005</b>	189	22 076	5 572	34 597	429
<b>2006</b>	249	11 205	10 469	24 740	666
<b>2007</b>	249	11 205	10 684	22 024	677

Basic characteristic of passenger travel in city transportation is abrupt reduction in transported passengers. Therefore, in 1998 67.901 million passengers have been transported and in 2007 only 22.024 million passengers.

#### ***Air transportation***

Air transportation is conducted from the airport "Konstantin the Great" that has a runway 2.5 km long and 45 meters wide, with a terminal building of over 1,700 square meters.

Basic characteristics of this airport are that:

- Allows regular and charter air traffic
- Is located in a zone with a very favorable weather conditions during the whole year,
- Are possibilities for alternative landing due to little number of foggy and snowing days
- And has possibilities for construction of the cargo center.

#### ***Postal activities***

Number of post offices and postal activities in a period from 1997 to 2006 are presented in Table number 18.

**Table 17.** Postal activities in a period from 1997 to 2006

Year	Number of post offices	POSTAL TURNOVER (DISPATCHED)	
		Parcel post in thousands	Packets in thousands
<b>1997</b>	25	15 668	169
<b>1998</b>	28	6 645	93
<b>1999</b>	28	5 902	46
<b>2000</b>	25	5 351	52
<b>2001</b>	25	5 401	49
<b>2002</b>	29	5 490	47
<b>2003</b>	23	4 759	38
<b>2004</b>	30	4 965	34
<b>2005</b>	28	3 195	29
<b>2006</b>	28	6 931	117

With the constant number of posts offices we can come to the conclusion that there is a significant reduction in dispatches of both parcel post and packets. Therefore the number of parcel post has dropped from 15.6 million in 1998 to 6.9 million in 2006, and the number of packets has been reduced from 169 thousand in 1997 to 117 thousand in 2006.

#### ***Telecommunication***

Information on telephone subscribers in Niš in a period from 1997 to 2006 are presented in Table 19.

**Table 18.** Number telephone subscribers in a period from 1997 to 2006

Year	Number of post offices	Number of telephone subscribers
1997	25	77984
1998	28	82842
1999	28	85117
2000	25	87241
2001	25	81068
2002	29	90689
2003	23	101494
2004	30	100787
2005	28	108191
2006	28	119079

Number of telephone subscribers in the city of Niš in has increased from 77,984 in 1997 to 119,079 in 2006 and this is an increase of 152, 7%

## 1.4 LABOR

### 1.4.1. Employment per sectors

Information regarding the employees per activity sector in a period from 1998 until 2007 is presented in a table 20.

**Table 20.** Employees per activity sectors

Year	Total	Employees in companies, institutions, cooperative farms and organizations							
		Grand total	Industry	Non-industry	Agriculture, forestry and water management	Extraction of ores and stones	Processing industry	Production of electricity, natural gas and water	Construction
1998	-	75 745	58 734	17 011	697	-	29 894	-	3 781
1999	-	74 699	57 373	17 326	816	-	29 229	-	3 749
2000	-	70 808	53 240	17 568	797	-	26 550	-	3 183
2001	75 061	68 737	52 396	16 341	776	101	25 099	1 625	3 496
2002	71 455	64 402	48 092	16 310	611	105	22 533	1 594	3 252
2003	68 669	60 791	43 187	17 604	540	107	19 061	1 546	3 588
2004	77 047	67 816	49 377	18 438	664	106	20 108	1 539	4 171
2005	80 457	65 084	46 183	18 901	661	101	17 613	1 554	4 255
2006	78 354	62 053	43 600	18 453	643	92	15 880	1 507	4 255
2007	78 167	61 457	...	...	641	95	14 779	1 507	4 201

Overlooking the structure, the registered number of employees in 2007 in all activity sectors was 78,167 and that is, in general, the same number as in 2006 (78.354). Number of employees in

industry has reduced from 58,734 in 1998 to 43,600 in 2006.

Despite that, number of employees in non-industry has increased from 17,011 in 1998 to 18,453 in 2006.

Number of employees in processing companies has also been significantly reduced (from 29,894 in 1998 to 14,779 in 2007), while there has been an increase of employees in construction (from 3,781 in 1998 to 4,210 in 2007).

#### 1.4.2. Structure of employees per sectors

Structure of employees in industry, non-industry and at private entrepreneurs in a period from 1998 up to 2007 is presented in Table 21.

**Table 19.** Structure of employees per sectors in a period from 1998 up to 2007

Year	Employees in companies			Private entrepreneurs	Total
	Total	Industry	Non-industry		
1998	100,0	77,5	22,5	-	100,0
1999	100,0	76,8	23,2	-	100,0
2000	100,0	75,2	24,8	-	100,0
2001	91,6	69,8	21,8	8,4	100,0
2002	90,1	67,3	22,8	9,9	100,0
2003	88,5	62,9	25,6	11,5	100,0
2004	88,0	64,1	23,9	12,0	100,0
2005	80,9	57,4	23,5	19,1	100,0
2006	79,2	55,6	23,6	20,8	100,0
2007	78,6	...	...	21,4	100,0

Structure of the number of employees within the sectors has significantly changed. Therefore, for example, in 1998 the employees in industry made up to 75.5% and in 2006 55.6%. Employed in non-industry were 22.5% and in 2006 23.6%. Plus the number of private entrepreneurs has increase from 8.4% in 2001 to 21.4% in 2007.

#### 1.4.3. Unemployment per professional education

One of the most significant macro-economical indicators that depict the condition of the industry, besides the employment, is the unemployment indicator. City of Niš has a very high unemployment rate. Total number of unemployed at the end of 2007 was 37,457, out of which 45.0% are men and 55.0% women.

Unemployed persons per professional education (total number of unemployed persons is also made of persons that are looking for a job for the first time and of persons that had previous working engagements) in Niš in a period from 1998 up to 2007 are presented in Table 22 and 23.

**Table 20.** Unemployed persons per professional education in a period from 1998 up to 2007

Year	Total		Non-qualified		Semi-skilled and lower educated	
	Total	Women	Total	Women	Total	women
1998	38050	22727	11616	8184	749	459
1999	40592	23863	11980	8335	745	464
2000	43405	24845	12453	8449	739	440
2001	38585	21202	10049	6295	613	364
2002	40157	21615	10479	6418	553	331
2003	44956	24046	11588	7010	511	343
2004	34516	18940	6801	4058	359	247
2005	34337	19111	7265	4313	376	236
2006	37177	20662	8197	4854	414	258
2007	37457	20617	8321	4828	408	247

The biggest number of unemployed is with High School diploma (13.485), skilled workers and highly skilled workers (10.823) and non-skilled workers (8321). Also, the large number of unemployed is with College (1,914) or University Diploma (2,506).

The most of unemployed personnel is between 31 to 40 years of age (24. 4%), apropos 19 to 25 years (21.1%) and from 26 to 30 years of age (16. 7%).

**Table 21** Unemployed personnel per professional education in a period from 1998 up to 2007

Year	Skilled and highly skilled workers		HIGH SCHOOL		COLLEGE		UNIVERSITY	
	Total	women	Total	women	Total	women	Total	women
1998	9524	4258	13195	8161	1413	782	1553	883
1999	10798	4757	13841	8516	1503	811	1725	980
2000	11920	5187	14894	8998	1600	818	1799	953
2001	11206	4750	13580	8189	1498	744	1639	860
2002	11641	4788	13879	8274	1664	807	1941	997
2003	12887	5231	15532	9154	1933	965	2505	1343
2004	10104	4375	13375	8063	1627	946	2250	1251
2005	10032	4432	12978	7970	1642	952	2044	1208
2006	10649	4676	13612	8332	1835	1069	2470	1473
2007	10823	4721	13485	8196	1914	1102	2506	1523

From perspective of particular professions there is a disproportion in offer and demand, and that indicates on improper follow-up of industrial needs for providing certain profession in educational institutions. Therefore, for example most of the unemployed with professional level of VII<sub>1</sub> (University Degree) are Economists, Lawyers and Medical Doctors, while among unemployed personnel with educational level IV most are gymnasium graduates, economical technicians, legal technicians and hairdressers.

Unemployment rate is almost 40% of active population.

## 2. SOCIAL SECURITY

### INTRODUCTION

In determining the concept of social security we start from human tendency towards security as universal human focus and creation of social practice that will within the existing cultural-ethnic values create the conditions for overcoming of human insecurity and risks in its life. **Social security** is defined as protection of human life from critical and overarching threats, and in doing so the long-lasting fulfillments of individuals are not in question.

Social security is achieved through:

- Right to health and medical protection
- Right to social protection
- Right to education
- Right to residence
- Right of children and youth
- Right to gender equality and women's human right
- Right of disabled persons

In security strategy of the City of Niš the evaluation of the social security is analyzed through the following sub-categories: health, social security, and local community, personal and collective security.

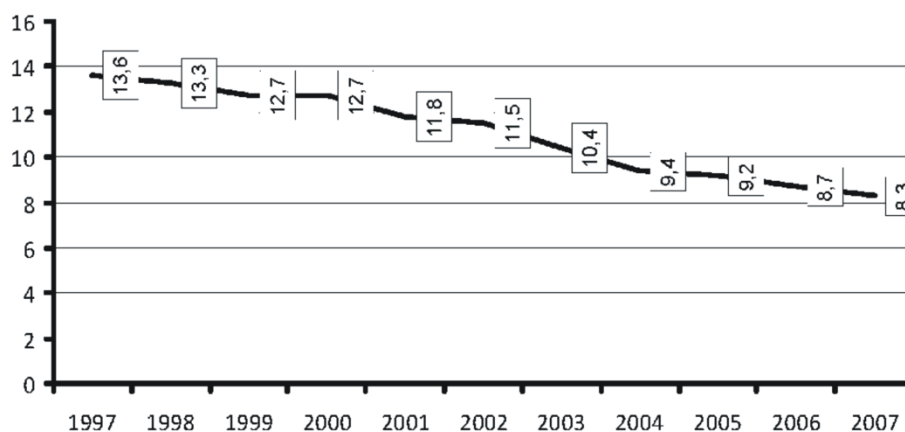
For each sub-category the specific indicators have been formed to make overview of the social security condition in the City of Niš possible.

SUB-CATEGORY	INDICATORS
HEALTH	Mortality rate of children under 5 years of age Providing medical care Medical status and risk
SOCIAL SECURITY	Poverty Domestic violence Quality of residence Quality of education
LOCAL COMMUNITY	Participation of the citizens in decision making process on local community level Tolerance level for different social groups within the local community Level of dispersion of national / religious extremism in local community
PERSONAL AND COLLECTIVE SAFETY	Crime Traffic Judicial protection

## 2.1. HEALTH

### 2.1.1. Health indicators

Mortality rate of children under 5 years of age per 1000 live bourn children is not monitored as a specific indicator of health on the territory of the City of Niš, but there is information for this indicator on the level of the Republic of Serbia that show that there is a positive trend in reduction of child mortality rate.



**Figure 1.** Mortality rate in children under five year of age per 1000 live bourn children in the Republic of Serbia

Life expectancy in good health and living age with disability (Disability-Adjusted-Life Year / DALY indicator) are not monitored as indicators on the territory of the City of Niš.

### 2.1.2. Indicators of the medical care safety

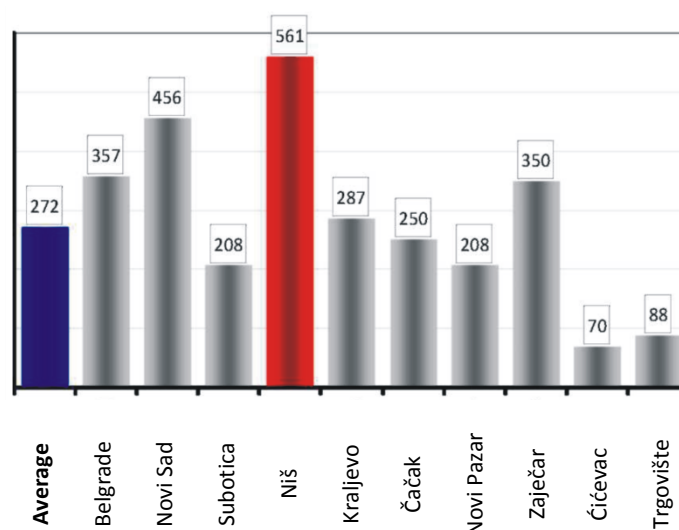
During the last few years in medical care sector in Serbia some very significant activities have been realized that support the equal and just access to the medical care services. A series of Laws, Bylaws, Programs and Strategic documents have been adopted on Republic and local level. The mechanism for monitoring of medical care services and health care service usage have been upgraded, and also exercise of prevention Medicare service and significant steps have been taken in providing greater availability of health services for endangered groups of population through numerous projects and recently adopted bylaw documents.

In Niš during 2007 there were more than 1,604 doctors responsible for providing health services to residents of Niš (out of which 170 were dentists)<sup>14</sup>, and that is significantly over the European average (about 340 doctors per 100,000 residents) or Serbian average (227 doctors per 100,000). 99 doctors have been responsible for providing general medical services during 2005, or in another words, one general practitioner doctor to 1,208 users of health care services (or 83 general practitioner doctors per 100,000 residents)<sup>15</sup>, and that is over the average on Republic of Serbia level

<sup>14</sup>) Institute for public health Niš, Statistical yearbook for 2007.

<sup>15</sup>) Institute for public health Niš, Analysis of medical condition of the residents in Nišava and Toplica Counties in 2006

in the observed year (1,049 users of basic health care protection per one doctor<sup>16</sup>). Comparing this information with the situation in surrounding municipalities of Nišava County is noticeable that in some of them the number of users of this kind of health protection per doctor was significantly smaller (Gadzin Han 687, Svrljig 790, Doljevac 997). Similar situation is also with basic health protection of School children (in Niš 1461 users per one doctor, which correlates with the average in Central Serbia). On the other hand, on one doctor in health care protection of school children in Niš in one year was 559 children (average for central Serbia is 679), which is significantly less than the number in surrounding Municipalities. The weakest medical protection by doctors is of women (4501 users per one doctor), although that is significantly better coverage when compared with the average in Republic of Serbia (6043 women of 15 and more years of age per one doctor). If the total number of residents per one doctor is analyzed (pharmacologist and dentists included), information shows that City of Niš with 178 residents per one doctor is in a group of Municipalities with the best ratio in providing health services (ahead are only two central Belgrade Municipalities and Municipality of Čuprija), way above the average of the Republic of Serbia with 368 residents per one doctor in 2007. It is a paradox that number of users per one doctor in specialist services in Niš are approximately the same to the number of users in general health care services (1280 in relation to 1208), and that can indicate the unfavorable ratio towards the prevention and primary health care protection in total personnel structure in medical institutions in the City.



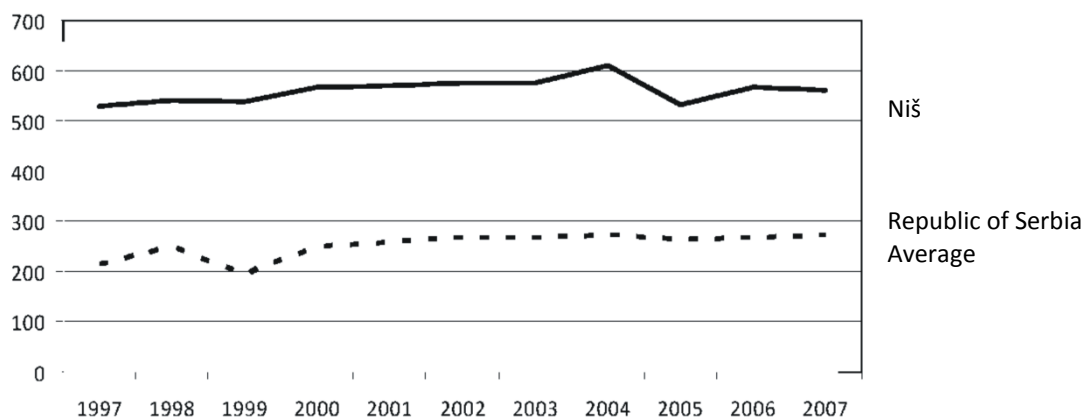
**Figure 2** total numbers of doctors (including dentists and pharmacologists) per 100,000 residents in the selected Cities and Municipalities in Serbia in 2007

It is estimated that every third woman in Niš with and age between 15 and 49 years that has a permanent sexual partner is using birth control methods. Higher percent is recorded with younger population of women (age 15 to 19), than in women of age between 40 and 49. On the other hand, the percentage of usage of any birth control method is significantly smaller in women from poor category, and that brings up a problem of accessibility.

Leading cause of mortality in residents of Nišava County in 2005 was blood vessel diseases that have participate in total mortality rate in 2005 with 53.37% (world average is around 30%). On the second place are tumors that make almost one fifth of deceased – 17.55% (world average is 13%). In the structure of the mortality cardio-vascular diseases participate with 21.45% at total population, while among the actively working population it is a leading cause with a percentage of 22.35%. If the

<sup>16)</sup> Institute for public health of Serbia "Dr. Milan Jovanovic Batut", Medical statistical yearbook of the Republic of Serbia, 2005.

presented data is compared with the average on the level of the Republic of Serbia it can be noticed that a mortality rate of cardiovascular diseases is insignificantly lower in Nišava Region than on the level of the Republic of Serbia with 56.84%. Mortality rate from cardiovascular diseases in women are higher than in men, both in Niš and on the level of the Republic of Serbia.



**Figure 3** Trend of the total number of doctor (including dentists and pharmacists) per 100,000 residents in Niš in a period from 1997 to 2007

Mortality caused by cardiovascular diseases is increasing. Ischemic heart diseases and cerebrovascular diseases are the leading causes of mortality in this disease category. The highest mortality rate in cardiovascular diseases is due to increased blood pressure, ischemic heart diseases and cerebrovascular diseases. In the structure of the Nišava County, after Belgrade, there is by far the biggest number of patients with acute coronary syndrome. It is estimated that every other adult resident of Serbia in 2006 had an increased blood pressure (46.5% in Serbia, 49.9% in Southeast Serbia) which represents a significant increase in comparison with 2000, but also that frequency of increased blood pressure diseases in the region of Southeast Serbia is statistically significantly smaller than in other regions of Serbia (3.4% in comparison with Serbian average of 5.4%)<sup>17</sup>.

It is indicative that residents of this part of Serbia believe in much smaller percentage than on Republic average that are exposed to risk factors of cardiovascular diseases (overweight, increased blood pressure and diabetes) and this is especially noticeable in rural areas and with poor population. It can be noticed that the number of those who consider themselves exposed is generally reducing, although the number of patients is increasing and the mindset on medical risk is growing, this indicates to necessity to conduct educational projects in order to increase medical awareness and health risks.

### 2.1.3. Indicators on medical status and risks

One of the key indicators of the medical status and quality of life is the perception of health, which includes individual evaluation of physiological, physical, psychological and social wellbeing and effect of health on other aspects of life, as to individual possibilities and self-respect. In Serbia in 2006 only 15.7% of the adult population has evaluated their general medical condition as bad or very bad<sup>18</sup>. This percentage is even higher in Eastern (15.8%) and Southeastern Serbia (16.6%). Every

<sup>17)</sup> Ministry of health of Republic of Serbia, Research of health in Republic of Serbia, Final report, 2006.

<sup>18)</sup> Ibid.



fifth grown up resident of Southeast Serbia believes that his or hers medical condition has deteriorated in the last year, and that is almost 3% higher than Serbian average. On the other hand percentage of the grown up population that had desirable (correct) attitude on responsibility for own health in southeast Serbia is higher than Serbian average.

Vast majority of grown-up population of Niš is spending their free time without any physical activities, and the number of those who are spending their workdays sitting is increasing.

As the most significant factors that cause medical problems based on the opinion of the residents in Southeastern Serbia are stress, hard living conditions and bad diet. Population of Southeast Serbia is significantly more subject to stress than Serbian average (48.3% in comparison with 43.9%). Although almost three quarters of the grown up population has proper opinion on health risk factors and are following media health campaigns, only one third has during the researched year (2006) changed something in their health behavioral patterns, and this is significantly less than in the year 2000<sup>6</sup>.

The number of residents with long lasting disease or medical problem is increasing (according to the estimate every fourth resident of Niš), which is reflected, among other, in ability to perform everyday activities. The number of population that can't perform their basic personal hygiene needs without assistance is increasing, especially in aged population. Every eleventh person has limited possibilities in self supporting, apropos they can't perform personal hygiene activities without assistance.

Smoking prevalence in grown-up population in Serbia in 2006 has been 33.6% and its declining in comparison to year 2000 (40.5%). On the territory of Southeast Serbia smoking prevalence is somewhat higher than in comparison with Republic level of 35.3%. It Can be sad that the residents of this part of Serbia are "holding a record" in tobacco consumption, because over 21% is smoking more than 20 cigarettes per day.

Smoking prevalence in population of young people of age between 15 and 19 years in Serbia in 2006 has been 15.5% which is also a European average and its declining when compared with year 2000 (22.9%). More than half of boys and girl of age between 13 and 15 years have tried smoking cigarettes, and approximately one third has lit up their first cigarette before 11 years of age. On the territory of the Southeast Serbia smoking prevalence in young population is somewhat lower than on Republic level and was 13%. However according to the research of the Section for prevention of addiction diseases of the Department of education, culture and sports, the percentage of young population in Niš that are everyday or occasionally smoking is significantly higher and it goes up to 25%<sup>197</sup>.

Although the research shows that consumption of alcohol both on the level of the Republic of Serbia and Niš after year 2000 has been reduced and the number of residents that are not using alcohol has increased, the misuse of alcohol is still a major socio-medical problem. According to the analyzed indicators, the population of East and Southeast Serbia, due to alcohol drinking habit, is in a group with highest risk of illness and pathogenesis of various problems as a consequence of alcohol misuse. Poor population is using less alcohol in percentages, but is in significantly higher percentage is drinking everyday and in larger quantities than richer portion of residents.

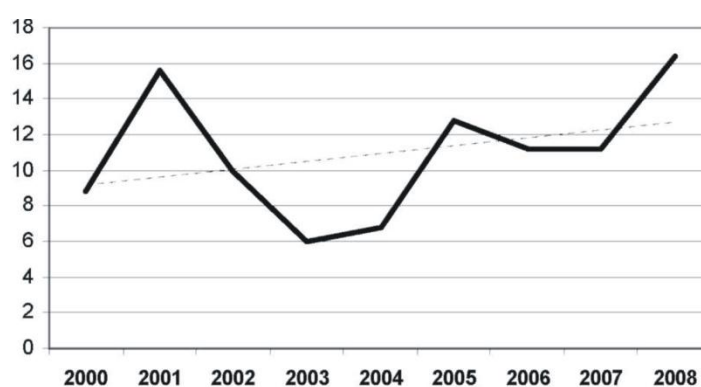
On the other hand, consumption of alcohol in adolescents does not show signs of reduction when compared to previous years. In youth population in Serbia with the age of sixteen 93% has

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<sup>19)</sup> Assessment in misuse of cigarettes, alcohol, and other drugs and level of information of pupils, teachers, professors and parents, City of Niš, Sector for education, culture and sports, Department for addiction prevention, 2005.

tried alcohol at least once<sup>208</sup>. It is disturbing that on the territory of Southeast Serbia the percentage of adolescents that are regularly consuming alcohol is higher than in other regions of Serbia (for example three times higher than in Vojvodina). Every third female pupil and every other male pupil of Niš schools has consumed alcohol to the level of drunkenness in year 2005.<sup>21</sup> Average age of first time consumer of alcohol is 14.2 years! Every third adolescent with the age of 12 to 19 years in Southeast Serbia had an experience of drunkenness, and every eight was drunk two or more times. Biggest tendency for excess alcohol consumption is demonstrated by adolescent boys, but also young people of both genders that are living in households with higher incomes. Alcohol is socially acceptable and Strategy to fight misuse of alcohol and alcoholism still does not exist. Young men often drink because they believe that alcohol will boost up their mood or that it will relax them. Drinks are consumed three to four times more often by those who are living in families that have, or that had, frequent drinking problems. Ban on sale of alcohol to minor is on power as of 2005 through the Law on protection of consumers, while the ban of serving alcohol to minors has been established by Law on public law and order that had his last amendment also in 2005. Sale of alcohol to minors is also controlled by reports made from citizens or during permanent control and monitoring of Market Inspection. In practice this represents almost impossible task and it all comes down to the moral of the bartender and his assessment if it is minor in question. Control of serving alcohol drinks to minors in bars, restaurants and clubs is under the jurisdiction of tourist inspection of the Ministry of Economy and Regional Development, and the fines are symbolical.

According to the available researches, 6.9% of young people in Serbia with the age between 15 and 19 years have tried some psychoactive substance. In Niš this number is significantly higher. First drug that young people in Niš come in contact with is marijuana and that happens in first High School grade – 11% of students of I grade has tried marijuana, and this percentage is growing to 20.6% by IV grade<sup>2210</sup>. Some other drugs have been tried by 2.4% of the total tested population and it is mostly ecstasy, various pills, but also cocaine and heroin. Also it is quite common to make combinations of alcohol and various medicaments.



**Figure 4.** Number of registered suicide cases in Niš per 10,000 residents in a period from 2000- 2008.

Number of suicides has been increasing since 2002 and the highest has been in 2008. Prevention of the suicide behavior and the increase trend can be lined with the economical hardship

<sup>20)</sup> Institute for public health "Dr. Milan Jovanovic Batut", "Health of residents of Serbia – analytical study 1997-2007"

<sup>21)</sup> Assessment in misuse of cigarettes, alcohol, and other drugs and level of information of pupils, teachers, professors and parents, City of Niš, Sector for education, culture and sports, Department for addiction prevention, 2005..

<sup>22)</sup> Assessment in misuse of cigarettes, alcohol, and other drugs and level of information of pupils, teachers, professors and parents, City of Niš, Sector for education, culture and sports, Department for addiction prevention, 2005.

of the individuals above all, crisis in families and family relations and loss of perspective. It is obvious that in a period from 2002 and 2004 the number of suicides with the fatal outcome has been significantly smaller than before and after this period, which can be explained with the increase of the living standard and increased expectations after long period of economical and social stagnation in nineties.

## **2.2. SOCIAL SECURITY**

### **2.2.1. Poverty**

Although the poverty rate in Serbia in the period 2002 - 2007 has been reduced from 14% to 6.6%, the poverty stays a huge problem in the field of social security in Nis. Although there are not reliable data for different unites of local self government, the fact is that the whole Southeast Serbia, including the City of Nis, is the territory with very high poverty phenomenon comparing to the Serbia average. Also, the poverty research indicates that after a long period of poverty reduction tendencies in Serbia, in 2008 poverty rate has increased to 7.9%.

The poverty on the City of Nis territory more and more refers to the rural population where the poverty parameters are more visible. Study on life standard in Serbia showed that the poverty index in the rural areas in 2007 was much higher than in urban areas (18.7% compared to 3%). Nevertheless regardless to the significant poverty reduce in the period after 2002, the poverty in rural areas increases on the whole territory of Serbia: 55% of poor people in Serbia lived in the country in 2002 while that percentage in 2007 increased to 61%. Old persons are more exposed to the risk of poverty and that risk is for 40% higher than the population average. There is also the phenomenon so-called "feminization" of poverty: women are more exposed to this phenomenon, mostly in rural areas and mostly of a lower educational status. For both poverty reasons and dominant traditional and paternalistic behavioral patterns, old women living in the country in most cases are left without possibility to make choices and without possibility to have basic human rights which influences both their social and health status in a negative way. According to researches (Analysis of Poverty Characteristics in Serbia, 2009) 58% of women living in rural areas in the region of Nis estimate that their financial status is worse than it used to be 10 years ago.

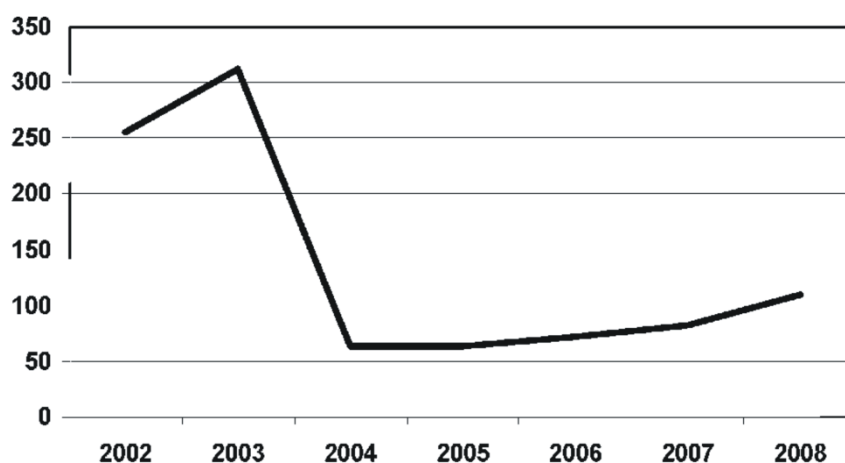
Poverty of children is a specific problem. The poverty rate of children up to the age of 14 in Serbia is higher than the poverty rate of the whole population (9.7%). The Roma population is also jeopardized by poverty with the much higher poverty rate than average.

The poverty rate increase during 2008 indicates that there are new forms of poverty, before all due to the economic crisis and the problems it created. The particular problems in Nis are the unsuccessful privatizations of public companies resulting in dismissal of employees or not disbursed salaries by new owners which significantly increase number of poor families.

### **2.2.2. Domestic Violence**

The phenomenon of domestic violence is present on the territory of the City of Niš. From the statistical point of view, after big decrease of number of reported domestic violence cases in 2004, this number has been increasing during the following four years. The process of domestic violence development in a family is complex, it lasts for years and it doesn't happen suddenly. The most

common causes of this sort of violence are jealousy, addictions, financial family problems, desire to control, etc. Statistical data on domestic violence that Ministry of Interior is in position of does not give the right picture on dispersion of this sort of violence, because it is very common that the victims of the domestic violence don't report all cases due to fear of violator or shame. Since 2006 domestic violence as felony has been encompassed by a new criminal law due to the fact that the number of cases in Serbia has been in constant increase and due to the importance for society to stop this phenomenon. Therefore, there are significantly larger number of criminal charges against this sort of violence (misdemeanor charges for public disturbances have been brought usually before or the warning measures have been undertaken).



**Figure 5** Total number of reported cases of domestic violence on the territory of Niš in the period 2002 - 2008

The highest percentage of victims exposed to the domestic violence is women. It is estimate that every fourth woman in Serbia experienced some form of physical and/or sexual violence during her life, most commonly from her partner. The violence increases with age so it occurs most frequently with the women between the age of 45 and 50. Women of a lower educational level are proportionally more exposed to the domestic violence.

### 2.2.3. Quality of Housing

Housing has several specific forms in the urban area of the City: individual (family), collective (multi-family) and mixed housing. Individual housing covers total of 88% while collective housing covers approximately 11% of the total of space designed for housing<sup>23</sup>. Individual housing is specific for suburbs of the urban part of the city as well as for the suburban settlements and country housing. Collective housing is specific for the central city zones (Boulevard of Nemanjici) as well as for the recently urbanized zones in the suburbs (Duvaniste, Pantelej, etc) while mixed housing stayed within zone of central city core as a result of partial reconstruction and transition from individual to collective housing. Although it is not possible to precisely determine the percentage of one-family individual houses within total number of residential apartments due to the restrictions in statistical research, it is obvious that this sort of housing in Niš dominates over the multi-family (collective) housing. Every residential apartment within collective housing is followed by 2.3 residential apartments in the individual houses. Although it could be noted that the housing fund in Niš is not

<sup>23)</sup> „Niš City Case Study“, Yugoslav National Habitat II Committee, Niš 1996.

old, every fifth residential facility within urban area of the city (regardless if it belongs to individual or collective housing) was built before 1960 while in the rural area every third residential facility is over 45 years old. It is estimated that the total Niš housing fund could be used for the next 15 years<sup>24</sup>. Over 98% of housing units were built out of hard material.

In the rural area the situation is much worse than in the urban city area: out of 17% of households is living in rural areas, 99% live in the residential apartments with electricity while less than 70% of all households have water and sewerage lines in their residential apartments. Only 66% of rural households have all appropriate modern sanitary conditions.

Housing Fund of the City of Nis has been intensively developing in the period between 1961 and 1981 following the dynamics of the increasing number of inhabitants in the city. This was particularly specific for urban area. From 1981 to 1991 the increasing number of housing units is even more drastic bearing in mind that the number of inhabitants has begun to slow down. It is interesting however that in the period starting from 1991 until the last census far more residential apartments have been built although the tempo of the population growth has almost stopped in that period.

According to the 2002 census 93,592 residential apartments were owned by physical persons, i.e. 98,1% of all inhabited residential apartment for the permanent housing<sup>25</sup> while only 385 residential apartments (so-called "unpaid off" apartments) were publicly owned (so intended to be leased by the public sector). For the rest of 1000 residential apartments it could be presumed that those are owned by the companies or institutions or those are on the market as unsold apartments. The average surface of the inhabited residential apartments for the permanent housing in Niš is 59.69 m<sup>2</sup>.

Residential apartments for permanent housing make 94.1% of a total housing fund (92.8% in Serbia) with 84% of permanently inhabited residential apartments. Every third apartment is located in rural area. 10% of unoccupied apartments (more than 10,000 on the territory of the city) statistically represent an important potential for development of housing sector, above all rental housing, but their territorial location is not good: certain number of these apartments are located in the rural area (47% of a total number but when compared to the total number of apartments on the territory of the city percentage of apartments in rural area is 37%) where there are not high housing demands and a part of those apartments has been deserted due to migrations or bad conditions of the housing space. However, it seems that taking this parameter into consideration the situation is somewhat better than the average level in Serbian.

Certain number of privately owned apartments is statistically registered as inhabited residential apartments, inhabited not by owners but by tenants, owners' relatives or other persons. Given that there is not an official statistics on number of residential apartments that are being rented, it could be assumed that the apartments belonging to the category of the apartments inhabited by tenants and "other persons" are typically rented by owners but that a significant number of apartments from the category of the apartments occupied by owners' relatives are also being rented based on a sort of unofficial agreement between owners and tenants. Based on this, it could be concluded that 7.5 - 9% of permanently inhabited housing fund is being rented (between 6200 and 7500 residential apartments).

If we analyze the standard of an apartment occupancy as a parameter for utilization of inhabited housing space in Niš, we could conclude that 47.9% of apartments have a "standard"

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<sup>24)</sup> Same.

<sup>25)</sup> For comparing purposes – this number in Belgrade is 97.2%.

utilization of housing space (one person per room), 23.6% of apartments have "normal" utilization (up to two persons per room) while every fifth apartment is over occupied (19.6%).

This picture is better than Republic average since the standard utilization of apartments in Niš is significantly higher (47.9% compared to 36% in Republic of Serbia) but the percentage of over occupied apartments is for almost two index points higher than the Republic average. Average number of rooms in the occupied apartments for the permanent housing is 2.53 (total number of rooms is 211893). If we follow the criteria one room-one person, City of Nis lacks 38625 rooms, i.e. one room goes to 1.18 inhabitants.

**Table 1** Average number of persons in the apartments according to 2002 consensus

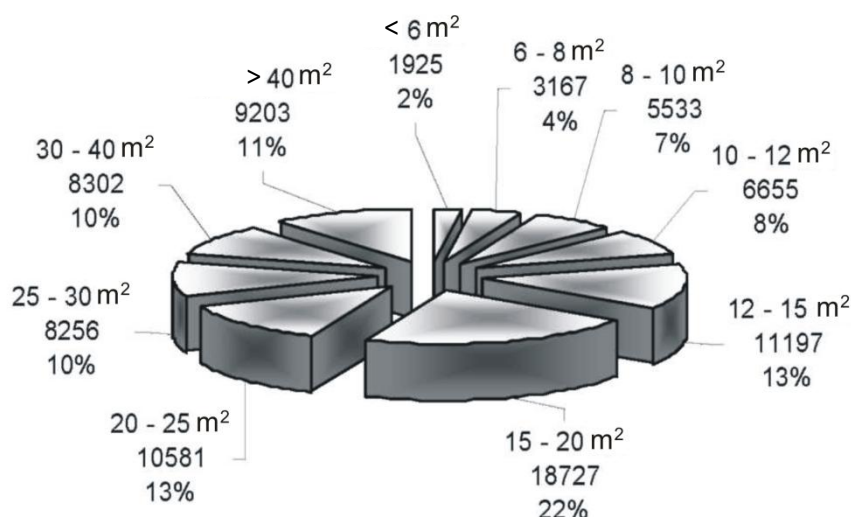
TOTAL NUMBER OF APARTMENTS		NUMBER OF PERSONS	AVERAGE NUMBER OF PERSONS PER APARTMENT
In occupied apartments for permanent housing	83546	263358	3.15
In the city area	61385	189483 (71.9 %)	3.08
In rural area	22161	73885 (28.1 %)	3.33
In other inhabited rooms		1404	
In city area	-	1055	-
In rural area		349	

Source: Statistic Yearbook of the City of Nis, 2004

**Table 2** Standard of apartment occupation – number of persons per room in the apartments from special room to five-room apartments

STANDARD OF OCCUPATION		NUMBER OF PERSONS	NUMBER OF APARTMENTS
Standard - one and less persons per room		86,089	41,022
Normal – two or less persons per room		13,666	20,134
Over peopled - more than two persons per room		-	16,786
Extreme –more than three persons per room			7,603

Source: Consensus from 2002



Source: *Apartments: size, quality, year of construction, ownership, households and persons – information per Municipalities*, Republic health insurance, Belgrade, 2004.

**Figure 6** Occupied apartments on the territory of the City of Niš per average usable area per one person (per results of census in 2002)

Illegal construction is most present in suburbs (settlement 9<sup>th</sup> of May, settlement Branko Bjegovic, Durlan, Duvanište, Čarlije, Brzi Brod). There are two obvious under standard settlements on the territory of the city (Stočni trg and part of the settlement of Crvena Zvezda) and both are housing Roma population. Both of these settlements are in urban part of the city, while the settlement Stočni Grad is less than kilometer away from center. Vast number of suburb settlements partly does not comply with standards, above all regarding the sewage lines. Biggest problems are in the field of sewage network lines and asphalt.

If the criteria of the residential housing is the average usable space of the residential apartments per person, 32% of the apartments has less than 15 m<sup>2</sup> per resident (which is identical, for example, with the housing conditions in Belgrade), out of which one third of the apartments has between 15 and 30 m<sup>2</sup> per resident, while 21% of the apartments has more than 30 m<sup>2</sup> per resident.

Out of 83,546 occupied apartments for permanent housing on the territory of the City of Niš more than half (57%) has between 40 and 70m<sup>2</sup>. Most common are apartments of 51 to 60 m<sup>2</sup> in size (24%), while only 3% of the apartments have more than 100 m<sup>2</sup> in size. A bit higher percentage of this goes on small apartments up to 30 m<sup>2</sup> in size (8%). Studios and separated rooms participate in total number of apartments with 5%, one-room apartments with 9%, biggest share is of two-room apartments (36%) and three-room apartments (37%), while on apartments with four rooms and more goes 13% of the total housing fund.

Standard of housing in regards of housing comfort has been significantly improved in comparison to earlier period. 11.2% of the apartments are without bathroom and 16.2% without toilet inside the apartment. 27.8% of the apartments has all parameters of the residential comfort (remote or central heating, water, sewage and electrical lines), 65.9% has all parameters of comfort, except remote heating, 3.5% of apartments does not have sewage, while 2.6% does not have water and sewage. Only 112 apartments on the territory of the City don't have any installations. Residential comfort in rural areas is significantly lower than in urban areas.

Number of the apartments in Niš since eighties exceeds the number of households. Although in the last decade, as the result of reduced residential construction and the migration of the

population towards the city, this coefficient drops when compared with 1991 but still on one household we have 1.12 apartments. This, unfortunately, does not mean that every household has an apartment, but that there is a significant number of the population with excess residential space. In Niš there was an urban policy for years based on which the individual residential construction has been conditioned with the construction of the family houses with ground floor plus one upper floor with two living units. For this excess of living space is now very hard to find place in rental market because of several reasons: individual houses are not attractive to tenants due to their inadequate equipment (above all the remote heating but also with other requirements), territorial disposition, habits, etc. renting sector is legally not been regulated, there are no guarantees both for owners and for tenants; rents are significant cost to tenants, while at the same time they are sometimes lower than depreciation of the apartments, and so forth.

In 76,138 apartments (91% of the total number of occupied apartments) only one household lives in, at 5,127 (6.2%) two households are living, while in 433 apartments there are three or more households living. Total of 431 one room apartments (including studios) has more than one household, while multiple households live in more than 1800 two-room apartments.

For the City of Niš there are no reliable researches on stratification of the households based on material situation or owned property. If projections for the whole territory of Serbia are used it can be concluded that 12,000 households has severely low material position, 42,000 low, 18,500 medium and 8,500 medium high and only 4,200 households has high material position.

Average monthly payments for residential expenses (rent, electrical energy, heating, gas, water, telephone, etc), for Niš can be assessed to be around 20% of the total monthly incomes of the household, is still relatively low in comparison to percentage that is separated for this purpose in developed countries. Reasons are in the following:

- Prices of services are still not economical (this above all relates to the prices that are under the jurisdiction of the local Municipality, while the prices of the electrical energy are getting close to economical);
- On total monthly separations for housing costs prices of the rent for the rented apartments do not significantly affect, because the percentage of the households that had become owners by buyoff is dominant in comparison to the population that is living in rented apartments.

On the other hand, it is evident that households from the category of low and medium low material position (63% of the total number of households) are not able to regularly fulfill their obligations for housing, while the households from the category of medium material position (22% of the total number of households) can regularly fulfill their obligations for housing but are not able to spend in investment maintenance of the apartment. Neither of these categories (total of 85% of the households) is able to finance with its own resources the procurement of the new apartment, neither to compete on the market for acquiring loans in current credit conditions.

Most vulnerable categories of the households are elderly households, rural households, households from the category of socially vulnerable groups, Roma households and refugees and internally displaced persons (the order does not reflect the intensity of vulnerability)

Refugees had an effect in increasing the number of residents in Niš for 1.91% so Niš is based on this parameter one of the cities with significant portion of refugee population in Serbia. Status of refugee is changed upon getting a citizenship, therefore is very ungrateful to statistically monitor their housing position. Therefore, for example, in 2004 in Niš 800 refugees are registered from Croatia and Bosnia and Herzegovina out of which 170 have been located in six refugee centers, while all the others have been in private housing. Most of the families have been living in rented apartments (92%) for which they have been paying rent of up to 50€ (21%), 50-100€ (52%) and over



100€ (19%). Although the number of internally displaced persons from Kosovo and Metohija is significantly higher than the number of refugees, problems of residence in this category are significantly different. It can't be with certainty determined the common housing profile of internally displaced persons, partly because of the lack of credible statistical information. Part of them has resolved their housing problem by purchase of the apartments on the market, which has caused higher demand and increase in prices of 15 to 20%. Part of them has been constructing individual housing objects in suburbs, quite often without proper construction license and by that increasing the size of informal settlements. There are a significant number of those who are renting and also of those who are living in the apartments of their cousins. It is evaluated that on the real-estate market they participate with one third, apropos with 1,200 to 1,500 families speeded evenly in all three categories.

In Niš there are 1000 users of nursing care and assistance. Number of persons with disabilities is significantly higher. Estimate of the Society of persons with disabilities is that there are approximately 700 and 800 persons in wheelchair. Living conditions of the persons with disabilities cannot be generalized and it mostly depends on material situation of the family with whom these persons are living. In general, biggest problem of persons with disabilities is the lack of housing subventions for disabled persons with low material status and unsuitable facilities for housing of persons with disabilities or dysfunctional locomotive functions. More than half of these persons are extremely poor. This high level of poverty affects the residential poverty in great extent. On the other hand, persons with disabilities have not been monitored until now, or have been partly monitored as a category that needs to increase the availability of housing with special subventions. City has no special resources allocated for this purpose. Inaccessibility of the housing facilities for specific needs of the persons with the disabilities is present in huge percentage at collective housing facilities. This situation has been improved after adequate Laws have been passed.

There are 5,687 members of Roma population living in Niš based on census results, although it is assessed that number of Roma population in Niš is fluctuating between 25,000 and 30,000, out of which 1,200 Roma belong in internally displaced persons category. Over half of the total population of Roma (62%) is younger than 25 years of age, while persons over 60 years of age make only 4,11%. Percentage of unemployment in Roma population on the whole territory of Serbia is four time higher than total population. Only 27.2% of Roma in Niš is economically active. Almost one third of Roma in Niš receives some form of social assistance and for 18% of Roma families social welfare is the only source for survival. Significant number of Roma families is supported by family members that are working abroad (20 to 27%). Only 9% of Roma has permanent financial incomes from labor, including retirement fund and health insurance. Only 2.5% of women in Roma population have permanent employment.

Majority of Roma population in Niš, regardless if they are living in City or countryside, is living in very bad housing conditions. In the City fiber of Niš, in three City settlements, there are about 10,780 Roma living based on the results of the research performed by Ministry Human and Minority Rights of Serbia and Montenegro. Settlement Belgrade mala that is located in central city fiber belongs in the group of traditional settlements erected before 1900. In the settlement besides 5,000 original Roma residents and 1,500 internally displaced Roma from Kosovo there are almost 2,000 residents of Serbian and other nationalities living. Settlement is mostly regulated and urbanized although there are poor areas that require interventions. In worst condition is also old settlement Stočni trg that has 4,000 Roma living, predominantly original residents, and the worst regulatory situation is in settlement Crvena zvezda that has 400 residents. In other settlements of Nišava County there are about 4,000 Roma living. Roma are attached to their settlements and are very reluctant to accept relocations.

#### 2.2.4. The Quality of Education

Education largely influences the parameters of the human security. Considering the right to education as one of the basic human rights, it is obvious that the educational level of population determines its possibilities for individual and collective development and therefore the level of individual and collective security.

Although official statistics doesn't follow the data on coverage by elementary education per municipality, it could be said that tendencies present in Nis follow the satisfactory percentage which in Serbia in 2006 was 98.41%<sup>26</sup>. Elementary education is compulsory and free of charge. The elementary school completion rate in the same year was 95% and its tendency has been stable during the last decade. However, only 74% of children living in the rural areas complete elementary school and the situation is, although significantly better in the last couple of years, even worse when it comes to the children from extremely poor families and Roma children. It is estimated that every fifth child from Roma families and every tenth child from the families whose income is beneath the poverty line is not covered by the elementary education. While with Roma children this percentage decreases, the percentage of children from extremely poor population who resign the elementary education is doubled in the period from 2002 to 2007<sup>27</sup>.

The coverage by the high school education shows the tendencies of a slight increase during the last years, so that in 2006 in Republic of Serbia it reached the rate of 78% with the resignation percentage of 2.3%. The percentage of children of the age between 15 and 19 who are not included in the educational system has been decreased during period 2002 – 2007 from 20.5% to 16.7%<sup>28</sup>. However, there is a tendency of increased influence of socio-economic factors to the coverage of certain categories of population by high school education: the educational system significantly less covers the youth from the families where the head of family is of a lower educational level (28%), youth from the poorest families (42%), Roma youth ( 62%), refugees and internally displaced youth (22%)<sup>29</sup>.

At the beginning of 2008 / 2009 school year in Nis there were 30066 children of the school age regularly enrolled into 35 elementary schools which is for nearly 700 pupils less than in previous year (2.06%). The decreased number of pupils covered by the elementary education represents years lasting tendency in the whole Serbia conditioned by the demographic decrease but this decrease in Nis is slightly higher – 2.06% comparing to the republic average of 1.6%. In the same year 13761 students were included in regular high school education in 19 high schools. In the regular high school education in 2008/2009 school year in Nis there were 10.24 students per one professor which equals to the average number of Republic of Serbia (10.10).

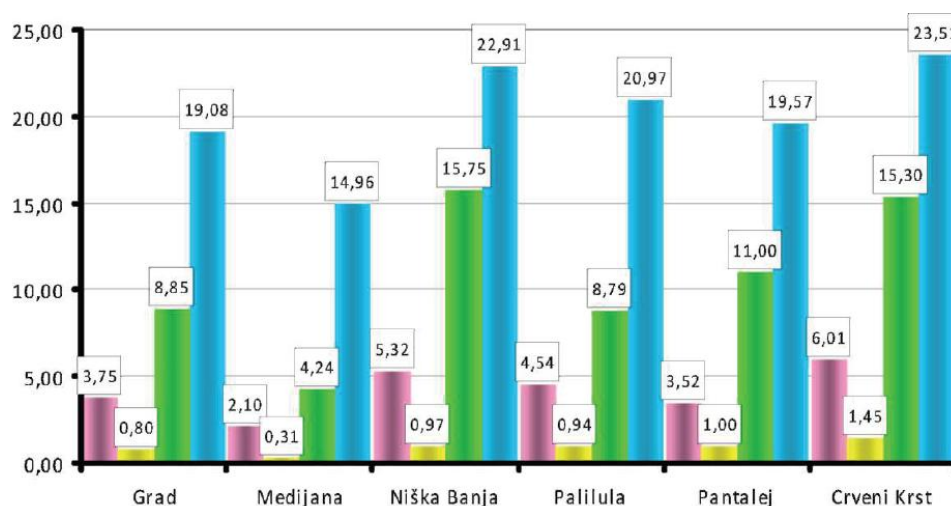
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<sup>26</sup> Statistic Yearbook of the City of Nis, 2007

<sup>27</sup> Rankovic, T. Good Quality Education for All Children, Review of realization of National Plan of Action for Children, Draft report, UNICEF, Belgrade, 2009.

<sup>28</sup> Study on Living Standard, 2008.

<sup>29</sup> Ibid



**Figure 7** Citizens of Niš Grad (City) of the age of 15 and above who per municipality who poses only elementary education or less

Percentage of illiterate citizens in the City of Niš is constantly decreasing in every inter census period. According to the results of the last census from 2002, there were 21 illiterate citizens per 1000 citizens in the City of Niš, i.e. 2.11% comparing to the total number of citizens (3.75% comparing to the population of the age 15 and above)<sup>30</sup>. Compared to the last census, percentage of illiterate citizens has been cut in half and this longtime lasting tendency indicates that at this moment the percentage of illiterate citizens could be near 1%. Nearly three fourths of illiterate citizens were of the age of 65 and above while the rest of one fourth are the young people who stopped the education and the largest number are Roma who leave the school between the age of 10 and 15. Compared to the Republic average (3.45% of illiterate people) the City of Niš has much better indicators. If we compare these percentages with the European countries, Niš has a significantly lower number of illiterate people than German average (over 6%), but significantly higher than Slovenian average (0.6%).

Much more unfavorable fact than percentage of illiterate citizens is the qualification structure of all citizens in the city which indicates that here are a much higher percentage of citizens with unfavorable educational structure. According to the results of the last census from 2002 out of total number of citizen of age 15 and above on the territory of the City of Niš 13.4% haven't completed the elementary school and 19.1% have only completed the elementary school. This means that one third of adults in the City of Niš has the lowest or doesn't have any qualification at all. The status is even more alarming in the municipalities that cover the rural areas – in Niška Banja (45% of adults haven't completed the high school), Palilula (35%), Pantalej (35%) and Crveni Krst (46%).

On the other hand, the results of the educational achievements of the students at the national tests indicate that the quality of elementary education in Nišava County is higher than the Serbia average<sup>31</sup>. Pupils in the lower grades of elementary schools in Nišava County made in 2004 above average result of the educational achievements in Serbian language and Mathematics and at the same time it was also recorded the above average quality of class meetings.

<sup>30)</sup> Statistic Yearbook of the City of Niš, 2007

<sup>31)</sup> See the example: Educational achievements of the third grade pupils at the national testing in 2004, Institution for evaluating of education and teaching quality, Belgrade, 2006.

## **2.3. LOCAL COMMUNITY**

### **2.3.1. Citizen participation in decision-making on local-community level**

The participation of citizens in decision-making processes on the level of the local community is unsatisfactory. Although greater attention has been paid to issues of citizen participation since the year 2000, and there have been attempts to set up new participation mechanisms, this field is still lacking concrete results. This can be attributed to several reasons.

The authoritarian government model is hard to overcome. Authorities on all levels, including the Serbian local governments, are insufficiently prepared to accept the concept of sharing governance with the citizens, and their active participation in decision-making. The administrations prefer to remain true to the models of consultations with the population, rather than share the burden of decision-making. Certain legislative solutions additionally hinder the including of the general public in the decision-making process.

The population is largely uninterested in taking part in the decision-making process on the local-community level. The reasons behind this are the long-term negating of including the public in the making of decisions and the lack of public awareness of the need to take part.

The civil sector is underdeveloped, fragmented and preoccupied with its own internal problems.

The level of informing the general public is underdeveloped.

### **2.3.2. Tolerance levels towards the various social groups within the local community**

The tolerance levels towards the various social groups are satisfactory, looking at the outward manifestations. No major incidents relating to intolerance, characteristic for large cities in Serbia, have been recorded in the past eight years. On the other hand, a lack of tolerance towards minority groups (primarily sexual minorities) can be seen, although this is still not manifested by disruptions of safety conditions in the cities.

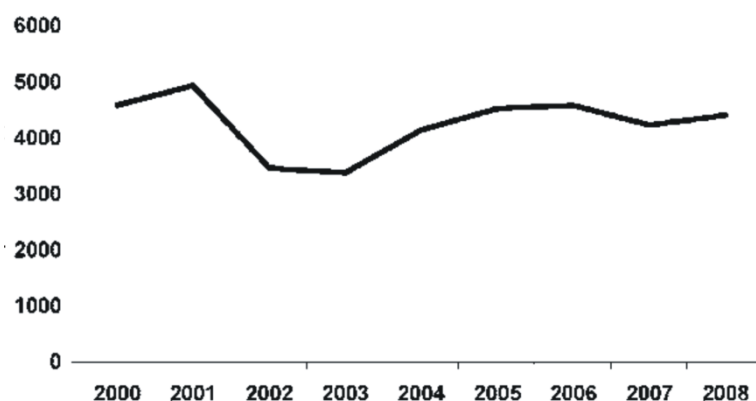
### **2.3.3. Levels of national and/or religious extremism in the local community**

National and religious extremism are not present in the local community.

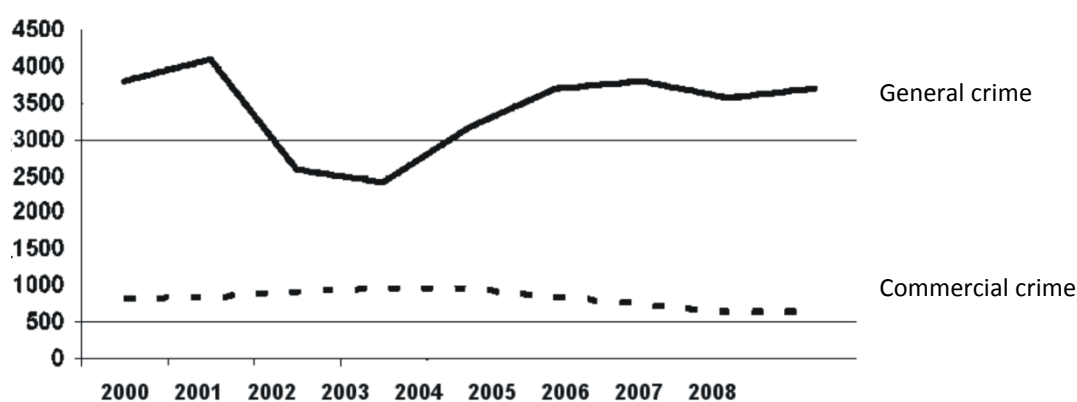
## **2.4. PERSONAL AND COLLECTIVE SAFETY**

### **2.4.1 Crime**

The overall crime rate on the territory covered by the Niš Police Department rose from 2003 to 2006, and then entered a period of stagnation. A similar trend was noticed in the segment of general crime, while commercial crime is in a slight decline. It is interesting that the rate of commercial crime was on the rise in those periods when general crime was declining, and vice versa.



**Figure 8.** Overall crime trend in the area covered by the Niš Police Department in the period 2000-2008.  
Vertical – Total number of recorded crimes; horizontal – year

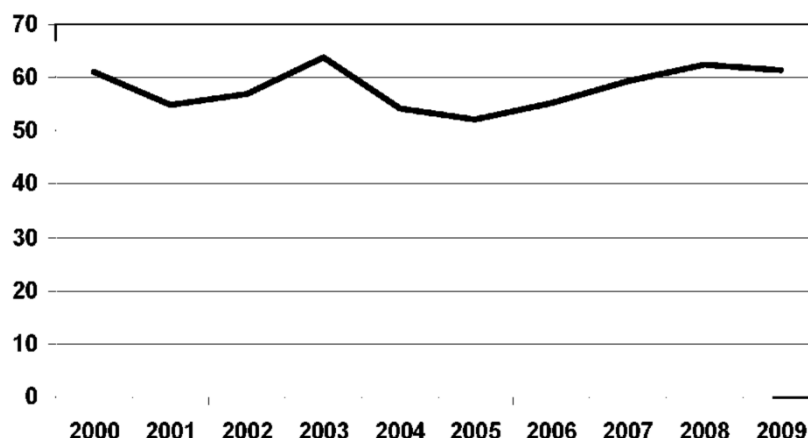


**Figure 9.** Crime trend by type in the area covered by the Niš Police Department in the period 2000-2008.  
Vertical – Number of crimes; horizontal – year

High-technology crime has been monitored in Serbia since 2006, when it was defined by a new criminal code. Since then a total of 142 acts of high-technology crime have been recorded in the Niš area. The monitoring of so-called ecological crime was introduced that same year, and 72 acts of such crime have been recorded in the period 2006 - 2009.

Most of the crimes in the general crime category (around 80%) are crimes against property (robbery and grand larceny, banditry, fraud, extortion and unauthorized use of vehicles). Violent behavior, infliction of bodily harm and grievous bodily harm, attempted murders and murders make up around 4%, while distribution and use of psychoactive substances account for slightly over 3% of all committed general crimes.

According to the data of the Ministry of Interior from 2000 to 2008, with the first eight months of 2009, 33,052 acts of general crime were reported. The clear-up rates for such crimes varied from 52.29% to 63.93%, making the average crime clear-up rate 58.17%. After a decline in 2004 and 2005, the clear-up rate was on the rise from 2005-2008, and has almost reached the highest rate recorded in 2003.



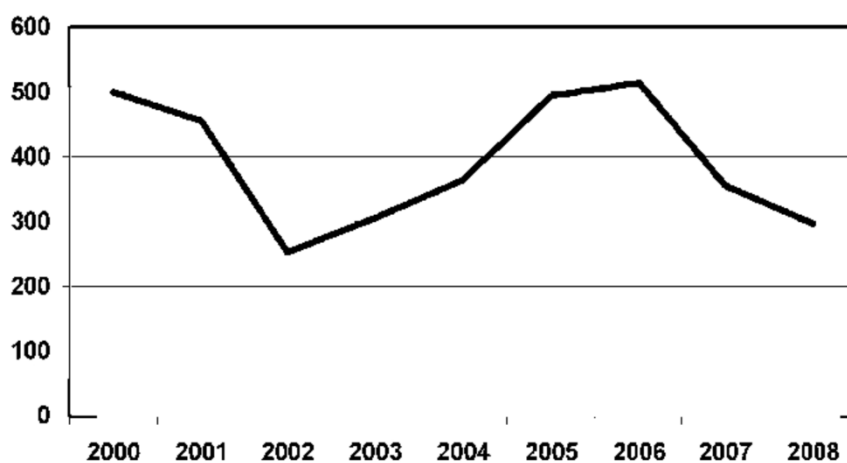
**Figure 10.** Percentage of crime-solving in the area covered by the Niš Police Department in the period 2000-2009 (for 2009 only for the first 8 months). Vertical – percentage of solved crimes; horizontal - year

At this time no valid statistical data is available on the percentage of reported crimes that resulted in final awards. There is no satisfactory feedback from the courts to the Ministry of Interior regarding the manner of processing the charge sheets submitted to the judicial organs by this Ministry.

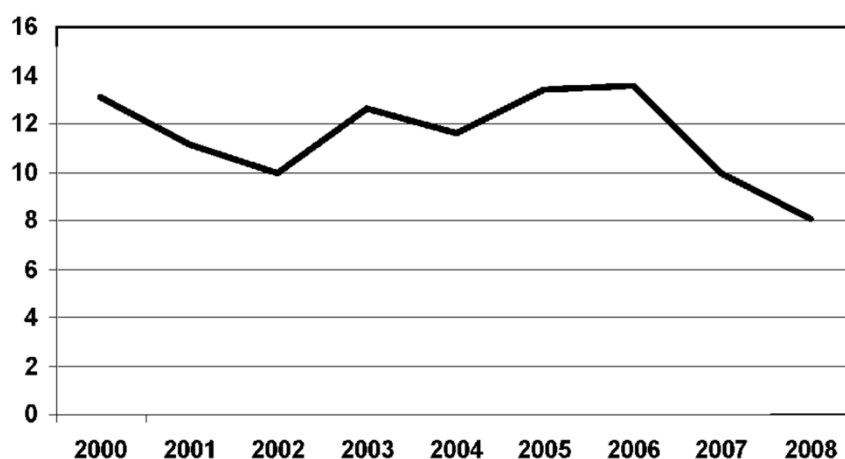
The number of committed acts of juvenile crime follows the trend recorded for general crime. Since 2006, when 516 crimes with juvenile participants were recorded in Niš, this number has been in noticeable decline.

Despite the general belief that juvenile crime has an ever-increasing share in the overall crime rate, the statistical data for the area covered by the Niš Police Department indicates that the percentage of juvenile crime has been noticeably dropping since 2006, after several years of rising. The smallest percentage of share of juvenile crime in the overall crime rate was seen in 2008 (8.04%), while it is expected to be under 8% in 2009.

On the other hand, there is a visible increase of peer violence in juveniles in Niš. According to the results of the Research on Student Safety conducted in Niš in 2008 on a sample of 107 elementary school final-year students, half the students believe that the degree of peer violence has increased. Violence in schools is becoming increasingly serious, and is not limited to just verbal violence.



**Figure 10.** Number of committed juvenile crimes in the area covered by the Niš Police Department in the period 2000 – 2008. Vertical – Total number of juvenile crimes; horizontal - year



**Figure 12.** Percentage of juvenile crime in the overall crime in the area covered by the Niš Police Department in the period 2000 – 2008. Vertical – Percentage of juvenile crime; horizontal - year

As many as 17% of survey participants admitted that they had taken part in some form of violence, and every tenth survey participant has been a victim. This number fully corresponds to the percentage of 11% of youths between 15 and 19 on the level of the Republic of Serbia that have been exposed to some form of violence (according to the Serbian public opinion poll on the safety awareness of youths, Resource, 2008). It is troublesome that peer violence has become an accepted form of behavior – more than half the children believe that it is justifiable to resolve disputes with violence, which is almost twice as high as the overall percentage recorded on the level of Serbia.

According to the data of the Niš Police Department no significant rate of antisocial behavior such as prostitution and gambling has been recorded. However, it should be noted that betting is more and more prominent, particularly in the younger population.

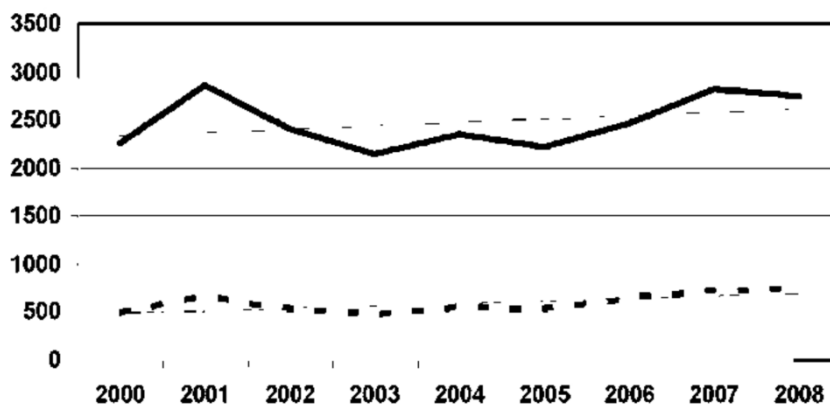
On the other hand, misdemeanors such as begging and vagrancy are increasing. The number that was in the range of 20 to 30 a year until 2006 exceeded 80 in 2007 and 2008.

Since the application of the new law on prevention of violence and unseemly conduct at sports manifestations as of November 2004, 51 crimes have been recorded. During sports manifestations in sports facilities 269 misdemeanors took place from 2000 to mid-2009. There can be no talk of organized groups inflicting violence at sports manifestations.

#### 2.4.2 Traffic

There is an upwards trend in the number of traffic accidents in Niš in the period 2000 - 2008. A similar trend can be seen with traffic accidents that result in casualties. The trend of increase of the number of traffic accident casualties is very pronounced. On the other hand, the number of fatalities in traffic accidents is declining.

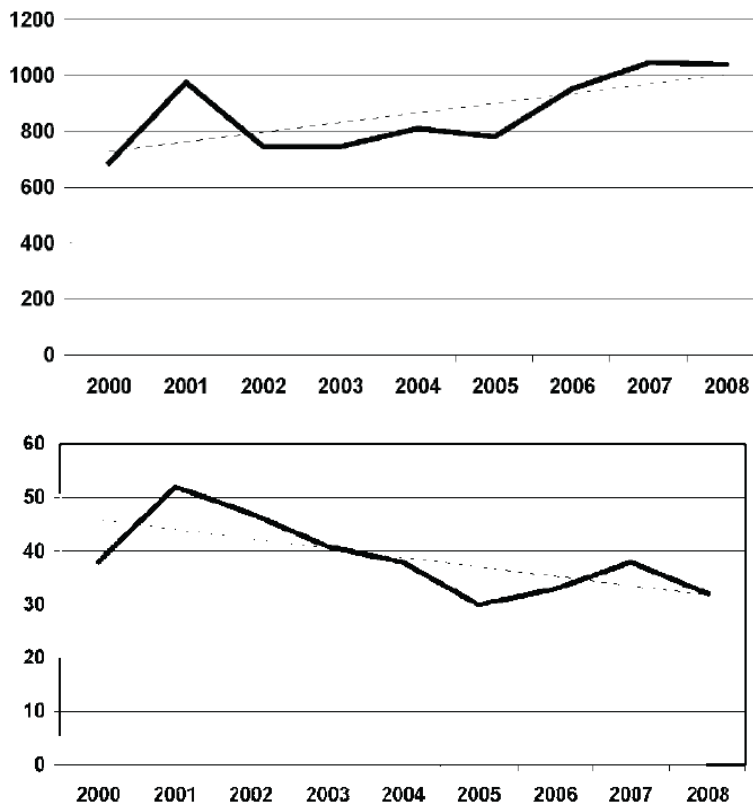
However, if the trend of the number of traffic accidents compared to the number of registered motor vehicles in the territory of the Niš Police Department is considered, a downward trend can clearly be seen. This indicates that the most significant cause of the increase in the number of traffic accidents is the large and unsustainable number of motor vehicles in the streets of Niš and the surrounding towns, taking into account the existing infrastructure.



**Figure 13.** Trend of total number of traffic accidents (upper line) and traffic accidents with casualties (lower line) in the territory of the Niš Police Department in the period 2000-2008.

In the period 2000 - 2008 a significant change in the structure of traffic injuries was noted. While the total number of traffic accident casualties showed noticeable growth, the number of traffic accident fatalities showed a marked decline.

Two thirds of all traffic accidents in the territory covered by the Niš Police Department took place in the City of Niš, while approximately 65% of all persons suffering traffic accidents recoded in the territory of the Niš Police Department were injured in the City of Niš. There was a total of 201 fatalities, 1089 seriously injured persons, and 4300 persons with minor injuries.



**Figure 14.** Number of fatalities and number of casualties in the territory of the Niš Police Department in the period 2000-2008. Vertical – number of fatalities; horizontal - year



### **2.4.3 Judicial protection**

The network of courts in the Republic of Serbia is made up of courts of general jurisdiction (138 municipal courts, 30 district courts and the Serbian Supreme Court) and special courts (17 commercial courts and the Superior Commercial Court). The Niš Municipal Court employs 60 judges, the District Court 21 judges and the Commercial Court 10 judges. The number of judges per every 100,000 citizens of Niš cannot be determined since the district and commercial courts have broader jurisdiction, i.e. they cover the territory of the Nišava region.

Despite the fact that it is not possible to accurately monitor the average duration of procedures before the civil courts due to the current reform of the judicial system, the general impression is that those citizens of Niš most in need of assistance and access to the judicial system frequently do not obtain services of the appropriate level and their access to justice is hindered in the current manner of operation of the judicial bodies. Access to the judicial system is limited by the meager budgetary possibilities for legal assistance, poor legal framework and distribution of information relating to laws and courts.

### **3. ECOLOGICAL SECURITY**

#### **INTRODUCTION**

**Ecological security** is the process of securing the protection of the vital interests of persons, nature and society from actual and potential threats posed by anthropogenic or natural influences on the environment.

The ecological security system includes the overall judicial, technical, medical and biological measures directed towards maintaining balance between the biosphere and anthropogenic influences. Entities relevant to ecological security are individuals, society, the biosphere and the state. On the other hand, the targets of ecological security are the vital interests of said entities: law, material and spiritual values, natural resources and the natural environment as the material foundation of the advancement of the state and society.

<b>SUB-AREA</b>	<b>INDICATORS</b>
<b>ATMOSPHERE</b>	Concentration of pollutants in the air Number of days per year with excess emission of pollutants Number of citizens connected to remote heating Percentage of connection to the gas network Noise level Radiation level
<b>SOIL</b>	Ploughland and land with permanent crops Percentage of arable land affected by erosion Flooded land Forest areas Deforestation intensity Damage from forest fires
<b>WATER</b>	Availability of monitored drinking water Length of constructed water supply network Microbiological quality of drinking water Length of constructed sewage system Quantity of treated wastewater Quality of surface waters
<b>BIODIVERSITY</b>	Town greenery Protected areas Endangered plant species Protected plant species Endangered animal species Protected animal species
<b>WASTE</b>	Quantity of waste per household Quantity of communal waste collected in an organized manner Percentage of hazardous waste State of dumps Quantity of waste recycled

The report on the situation regarding ecological security was prepared on the grounds of an assessment of the current state of the environment in the territory of the City of Niš. It is harmonized with the international indicator matrix and the framework regarding reporting on the state of the environment in the international exchange of information and the exchange of information within the Republic of Serbia. The assessment of the situation was made on the basis of data on monitoring endangerment through anthropogenic factors: atmosphere, soil, water and biodiversity.

Since the report relies on a rudimentary and lacking monitoring system and the existing unharmonized databases, the analysis of the state of the environment provided in the report is neither quantitative nor complete.

### 3.1. STATUS OF THE ATMOSPHERE

#### 3.1.1. Concentration of pollutants in the air

Systematic air quality monitoring is carried out by measuring and recording the values of certain indicators at measuring points in the urban station network. According to the Program for systematic air quality monitoring in the territory of the City of Niš, the following measurements are conducted: sulfur-dioxide and soot at eight measuring points daily, particulate emissions and heavy metals in particulate emissions (lead, cadmium, nickel and chrome) at eight measuring points once a month, and motor vehicle exhaust fumes (nitrogen oxide, formaldehyde and carbon monoxide) once a month at ten measuring points.

Particulate emissions (*lead, cadmium, nickel and chrome*) or aerosol sediments are organic or inorganic pollutants with particles larger than 10  $\mu\text{m}$ , which due to their weight settle on the surface. The concentration of particulate emissions changes with weather conditions. Lower concentrations are registered when there are precipitations, while the concentrations increase in the summer months when the land is dry and when it is windy. The concentration of particulate emissions is also affected by the manner of maintaining cleanliness of the streets and large surfaces, and the greenery as well

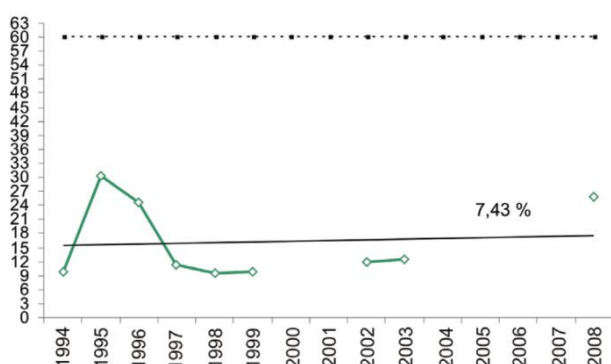
In the reporting period 2008–2009. at all of the measuring points (LC “Božidar Adžija”, elementary school “Sreten Mladenović”, LC “Ratko Pavlović”, Municipality “Crveni Krst”, Niška Banja-old baths, LC “Ledena Stena” and LC “Brzi Brod”) the values for the overall particulate emissions did not exceed maximum permissible levels and were in the range of 117  $\text{mg}/\text{m}^2/24\text{h}$  (Niška Banja – old baths) to 240  $\text{mg}/\text{m}^2/24\text{h}$  (LC “Brzi Brod”).

The concentrations of lead in particulate emissions were within permissible levels at all the measuring points. The concentrations of cadmium in particulate emissions were within permissible levels at all the measuring points, except at measuring point LC “Brzi Brod” where the measured concentration of cadmium was above the permissible level, at 9.4  $\mu\text{g}/\text{m}^2/24\text{h}$ . The concentrations of nickel in particulate emissions were below the meter detection limit, except at measuring points LC “Božidar Adžija” and elementary school “Sreten Mladenović” where the measured concentration of nickel was 3.5  $\mu\text{g}/\text{m}^2/24\text{h}$ . The highest concentration of chrome was measured at measuring point LC “Božidar Adžija” and was 10,6  $\mu\text{g}/\text{m}^2/24\text{h}$ .

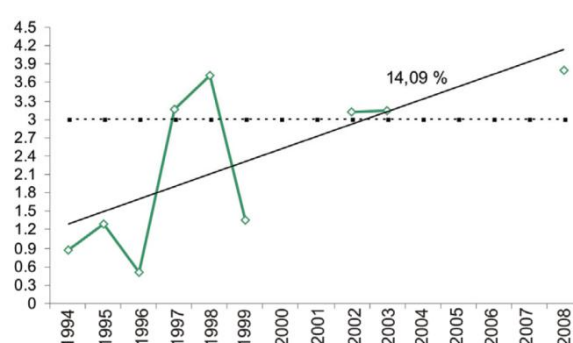
Motor vehicle exhaust fumes (*NO<sub>x</sub>, HCHO, CO*) were measured at ten measuring points. The examined parameters were nitrogen oxides, formaldehyde and carbon monoxide. During the period

of monitoring the mid-annual emission concentration of nitrogen oxides from 1994 to 2008, the maximum permissible levels were not exceeded at the busiest intersections in Niš. The trend for the mid-annual emission concentrations of  $\text{NO}_x$  for the analyzed period shows an increase of 7.43 % for the territory of Niš (Figure 1).

The analyzed emission concentration movement for  $\text{NO}_x$  for the territory of Niš in the period 1994-2008 can be taken as a relative indicator of the trend for emission concentrations since the continuity of monitoring was interrupted in 2000 – 2001 and 2004 – 2007. The measured concentrations exceeded the maximum permissible levels ( $60 \mu\text{g}/\text{m}^3$ ) at certain measuring points (MP) on certain monitoring days. Such exceeding was recorded in 1995 at MP Trg Knjeginje Ljubice and at MP Theater, and in 2008 at MP Railway Station, Bus Station and Palilula Ramp. Increase of the mid-annual emission concentration of  $\text{NO}_x$  for the monitoring period was recorded at the following measuring points: MP Railway Station by 5%, MP Trg Knjeginje Ljubice by 12%, MP Bus Station by 13.79 %. At MP Theater the trend for mid-annual emission concentrations of  $\text{NO}_x$  shows a concentration decrease of 1.99%.

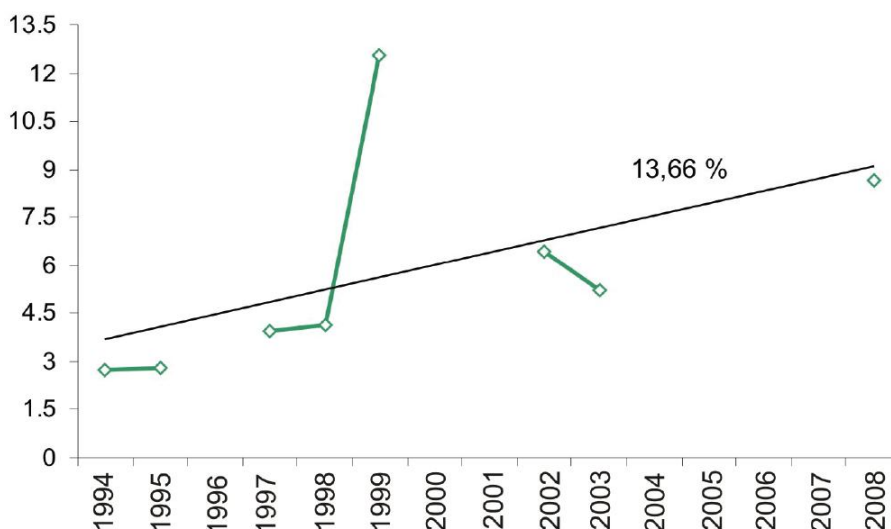


**Figure 1.** Mid-annual emission concentrations of  $\text{NO}_x$  in the territory of the City of Niš with line showing trend for period 1994-2008.



**Figure 2.** Mid-annual emission concentrations of CO in the territory of the City of Niš with line showing trend for period 1994-2008.

The emission concentrations of CO in the territory of Niš are monitored at the same measuring points as the emission concentrations of  $\text{NO}_x$ . Exceeding the maximum permissible levels of CO at the annual level during the reporting period was recorded in 1997, 1998, 2002, 2003 and 2008, while monitoring of emission concentrations of CO was not carried out in 2000, 2001, 2004, 2005, 2006 and 2007. On the basis of the conducted measurements it can be concluded that high concentrations of CO are present in the territory of Niš in the vicinity of busy intersections. Also on the basis of the available data regarding the trend of mid-annual emission concentrations, the trend shows an increase of emission concentrations by 14.09 % (Figure 2). Such increase of emission concentrations was recorded at MP Railway Station, MP Trg Knjeginje Ljubice, MP Theater and MP Bus Station. At these MPs the trend shows an increase of the emission concentrations of CO as follows: at MP Railway Station by 94.18 %, at MP Trg Knjeginje Ljubice by 13.99 %, at MP Theater by 14.22 % and at MP Bus Station by 13.81 %. Emission concentrations of HCHO are also monitored at those MPs that monitor the concentrations of  $\text{NO}_x$  and CO.



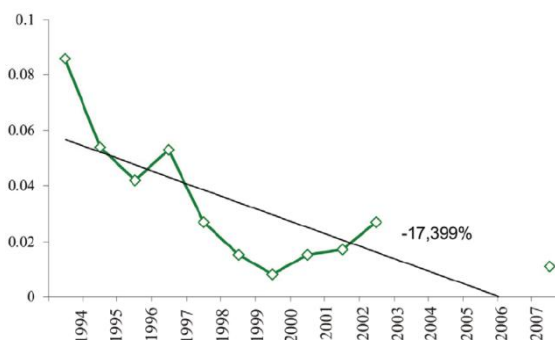
**Figure 3.** The mid-annual emission concentrations of formaldehyde in the territory of the City of Niš with line showing trend for period 1994 -2008.

The mid-annual emission concentrations of HCHO, measured for the territory of Niš in the period 1994-2008, were significantly below the maximum permissible levels and are in the range of 2.73 to 12.53 µg/m<sup>3</sup>. The highest recorded concentration in the entire monitoring period was below the maximum permissible level and was equal to 96,30 µg/m<sup>3</sup>, measured at MP Trg Knjeginje Ljubice in 1999. The trend for the mid-annual concentration of HCHO shows an increase of 13.66 % (Figure 3). At MP Railway Station, Trg Knjeginje Ljubice, Theater and Bus Station the trend also showed an increase of concentration levels by around 14%.

The mid-annual emission concentration movement for SO<sub>2</sub>, processed statistically for the period 1994 – 2008, is shown in the charts in figures 4, 5 and 6. Changes of air pollution rate are interpreted by a straight line and show a decline of 17.74 % for the overall analyzed territory. Furthermore the period 1994 – 2008 also shows a decline of 17.4 % in SO<sub>2</sub> concentrations in the heating season and 17,01 % in the non-heating season. The general conclusion is that all MP show a decline in emission concentrations of SO<sub>2</sub> in the range of 1.83 % to 11.66 %, except MP Trg Knjeginje Ljubice, where the period from 2001 to 2007 saw an increase of the mid-annual concentrations by 5.52 % and an increase of emission concentrations of SO<sub>2</sub> in the heating season for the period 2001-2004, by 2.94 %.

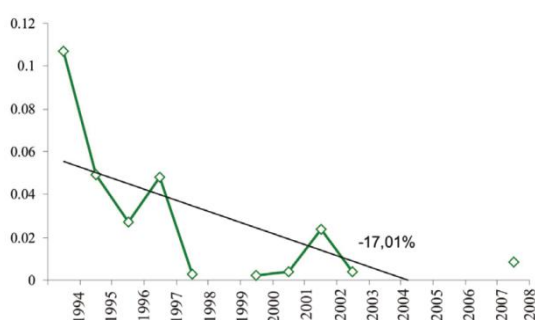


**Figure 4.** Mid-annual emission concentration of sulfur (IV)-oxide in the territory of the City of Niš with line showing trend for period 1994-2008.

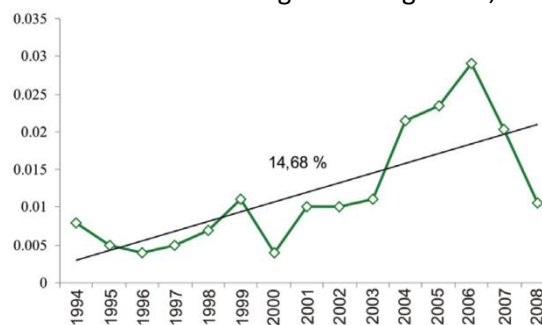


**Figure 5.** Mid-annual emission concentration of sulfur (IV)-oxide in heating season in the territory of the City of Niš with line showing trend for period 1994-2008.

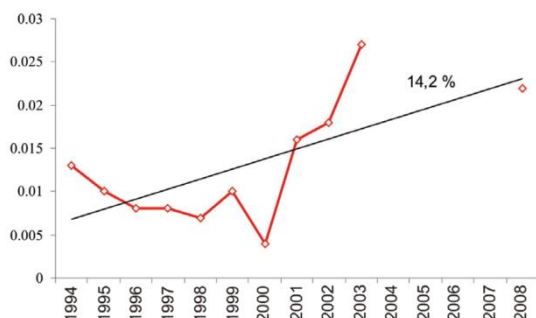
This measuring point saw a drop of emission concentrations in the non-heating season by 3.14% in the period 2001-2004. The greatest recorded drop of emission concentrations of SO<sub>2</sub> for the relevant continual monitoring period was at MP elementary school „Ćele Kula“ in the period 1994-2003 by 10.59%; at MP elementary school „Ćele Kula“ in the period 1994-2003 by 10.86 %, and in the non-heating season at MP elementary school „Čegar“ in the period 1994-2003 by 11.66 %. Exceeding the maximum permissible level of SO<sub>2</sub> for the analyzed period of 1994 to 2008 was recorded at: MP elementary school „Dositej Obradović“, MP elementary school „Ćele Kula“, MP „Narodne Novine“ and MP elementary school „S. Mladenović Mika“. Emission concentrations of soot are monitored in the territory of Niš at the same measuring points as the emission concentrations of SO<sub>2</sub>. The mid-annual concentrations movement for soot is shown in the diagrams in figures 7, 8 and 9.



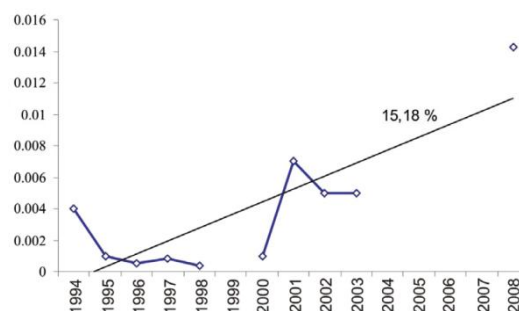
**Figure 6.** Mid-annual emission concentration of sulfur (IV)-oxide in non-heating season in the territory of the City of Niš with line showing trend for period 1994 -2008.



**Figure 7.** Mid-annual emission concentration of soot in the territory of the City of Niš with line showing trend for period 1994 -2008.



**Figure 8.** Mid-annual emission concentration of soot in heating season in the territory of the City of Niš with line showing trend for period 1994.-2008.



**Figure 9.** Mid-annual emission concentration of soot in non-heating season in the territory of the City of Niš with line showing trend for period 1994.-2008.

The trend for the mid-annual emission concentrations of soot for the period 1994-2008 showed an increase of 14.68 %. The analyzed period also showed an increase of 14.2 % in the emission concentrations of soot in the heating season, and of 15.18 % in the non-heating season. The measured emissions of soot in the territory of Niš were not high and did not exceed the maximum permissible levels. In the monitored period an increased concentration of soot on an annual level was recorded at MP "Trg Knjeginje Ljubice", elementary school „Dositej Obradović“, elementary school "Ćele Kula" and "Narodne Novine". Furthermore, an increased concentration of soot in the heating and non-heating season was recorded in the relevant monitoring period at MP "Health Care Institute", elementary school "Dositej Obradović", and elementary school "Ćele Kula". MP "Trg Knjeginje Ljubice"and elementary school "Čegar"showed a decline in the emission concentrations of soot in the heating and the non-heating season. The emission concentrations movement for soot at MP "Narodna Česma"and elementary school "S. Mladenović Mika"was characteristic. At MP

“Narodna Česma“ during the observed period 1994-2003 an increase in soot concentration by 6.44 % was recorded during the heating season, and a drop during the non-heating season by 1.5 %. During the same monitoring period (1994-2003) MP elementary school “S. Mladenović Mika“ recorded a drop in the concentration in the heating season by 12.81%, and an increase in the non-heating season by 5.66 %. MP “Trg Knjeginje Ljubice“ recorded high emission concentrations of soot in the heating season of 2001, exceeding the maximum permissible level ( $53 \mu\text{g}/\text{m}^3$ ). In 2002 the emission concentration of soot at MP “Trg Knjeginje Ljubice“ in the heating season was close to the maximum permissible level ( $49 \mu\text{g}/\text{m}^3$ ).

### 3.1.2. Number of days per year with exceeded maximum permissible levels for pollutant emission

According to the Regulations on maximum permissible levels, emission measuring methods, criteria for establishing measuring points and data records (“Official Gazette of RS no. 54/92, 30/99 and 19/2006), during the period from 1994 to 2008 days with exceeded maximum permissible levels for carbon monoxide and formaldehyde were not registered. Nitrogen oxides were registered at levels above maximum permissible only at two measuring points, “Trg Knjeginje Ljubice“ in 1995 - 2 days and in 1999 at measuring point “Railway Station“ - 2 days. The maximum permissible level of emission for sulfur dioxide is  $100 \mu\text{r}/\text{m}^3$  in inhabited areas, and  $150 \mu\text{r}/\text{m}^3$  in uninhabited and recreational areas, and for soot  $40 \mu\text{g}/\text{m}^3$  in inhabited areas and  $50 \mu\text{g}/\text{m}^3$  in uninhabited areas. The number of days with exceeded maximum permissible levels of sulfur-dioxide per measuring point in the period from 1994 to 2008 in the territory of the City of Niš is given in table 1:

**Table 1.** Number of days with exceeded maximum permissible levels for sulfur-dioxide per measuring point in the territory of the City of Niš

Measuring Point	Number of days with exceeded MPL by years						
	1994	1995	1996	1997	2002	2005	2005
Trg Knjeginje Ljubice	13	4	5	22		4	
Health Care Institute	10		1	7			
Health care center Železničar	28						
Elementary school Dositej Obradović	30	12	5	23	4		
Signal Block	26						
Elementary school Čele Kula	49	6	2	23			
Elementary school Čegar	22	4	5	13			
LC Božidar Adžija	25						
Narodne Novine	161	46	0	8			
Elementary school S Mladenović Mika	244	3	2	20			
Niška Banja	14	4	2	12			

The number of days with exceeded maximum permissible levels of soot per measuring point in the monitoring period from 1994 to 2008 in the territory of the City of Niš is given in table 2.

A particularly large number of days with exceeded levels for soot was recorded in 2008 at MP LC "Obilićev Venac", „Palilula Ramp“, LC “Ratko Pavlović”, LC “Duško Radović”

**Annual air quality index and air quality evaluation**

Based on emission concentrations of pollutants NO<sub>x</sub>, CO and HCHO that were monitored at busy intersections in Niš in the period 1994-1999, 2002-2003 and 2008, their air quality index – AQI was calculated. The annual AQI values relating to the mid-annual emission concentrations, are shown in figure 10. The calculated AQI values relating to the mid-annual emission concentrations of NO<sub>x</sub> recorded in the territory of Niš indicate that the air quality during the observed years was in the “good” or “moderate” range. The maximum AQI values for NO<sub>x</sub> were in the range of 51.71 to 59.88. Such AQI values indicate that at the points at which the concentration of NO<sub>x</sub> was monitored, it did not significantly degrade the air quality in the territory of Niš.

The annual AQI for CO in the observed territory of Niš indicate that the air quality with regard to CO was in the “good”, “moderate” and “unhealthy for sensitive groups” range (figure 11). AQI values above 100 were recorded in 1997, 1998, 2002, 2003 and 2008 with the maximum value of 140.17 in 2008, which puts the air quality in the “unhealthy for sensitive groups” range. It should be noted that the AQI was not calculated, due to lack of data, for 2000, 2001, 2004, 2005, 2006 and 2007, and that continuity of movement of the annual AQI for CO by MP was not possible due to change of the MPs during the observed years.

**Table 2.** Number of days with exceeded maximum permissible levels for soot per measuring point in the territory of the City of Niš

Measuring Point	Number of days with exceeded MPL by years															
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Trg Knjeginje Ljubice	81	70	18	23	45	54	81	87	51	84	55	92	142	126		
Health Care Institute	5		0	3	3	7	10	6	12	11	12	18	18	7		
Health Center Železničar	20															
Elementary school Dositej Obradović	6	1	2	4			11	12	18	18						
Signal Block	5															
Elementary school Čele Kula	6	2	3	4			11	10	4	4						
Elementary school Čegar	4	4		2	6	13			5	5						
LC Božidar Adžija	8								13	13					25	
Narodne Novine	6	11	3	6	15	25	16	13	13	13						
Elementary school S Mladenović Mika	5	3	1	2	3	8	1		2	2						
Niška Banja	2			1											5	
“Bubanj” settlement																
LC „Obilićev venac“															142	
Palilula Ramp															99	
LC „Ratko Pavlović“															32	
12. February Boulevard – Municipality															20	



Ledena Stena																			
LC "Duško Radović"																			142
LC "Brzi Brod"																			3

The air quality in the territory of Niš regarding the presence of mid-annual emission concentrations of HCHO, is in the "good" range, which can be concluded from the calculated AQI values shown in figure 12.

The calculated AQI values for SO<sub>2</sub> on an annual level for the entire analyzed territory of Niš are shown in the diagram in figure 13. The air quality in the Niš area, with regard to the mid-annual emission concentrations of SO<sub>2</sub>, for the observed time period, and according to the mean rate of the air quality index, is in the "moderate" range with emission concentrations in the range of 11.81 – 50.00 µg/m<sup>3</sup>.

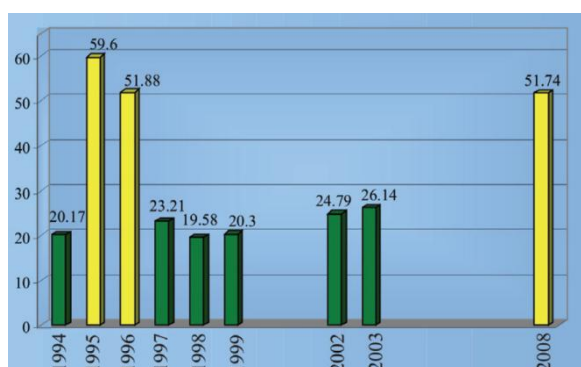


Figure 10. Annual AQI for NO<sub>x</sub> in the period 1994.to 2008.

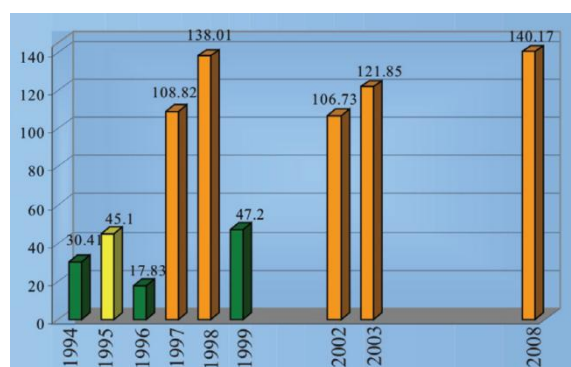


Figure 11. Annual AQI for CO in the period 1994. to 2008.

In 2000, 2001 and 2003, the AQI was up to 50, which indicates that the air quality was in the "good" range with emission concentrations up to 11.80 µg/m<sup>3</sup>. Air quality in the "unhealthy" range in the observed time period was characteristic for year 1994. The values for emission concentrations of SO<sub>2</sub> in that year were mainly in the 77.78 to 105.00 µg/m<sup>3</sup> range.

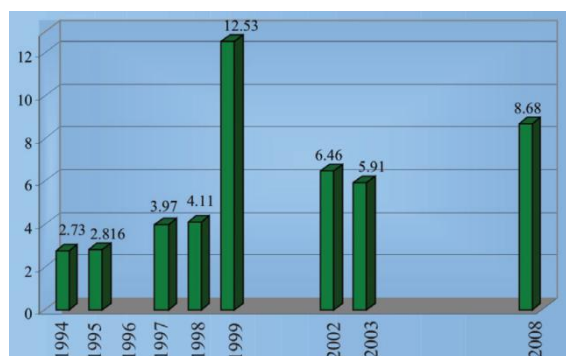
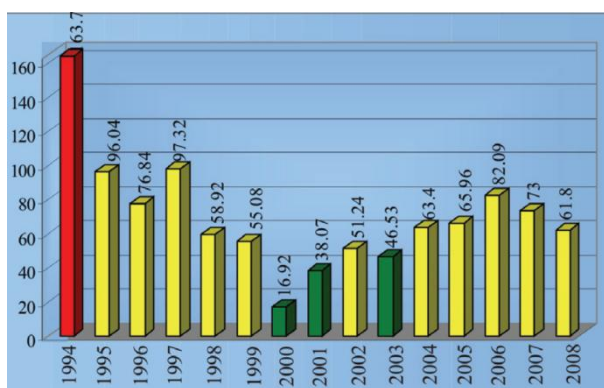
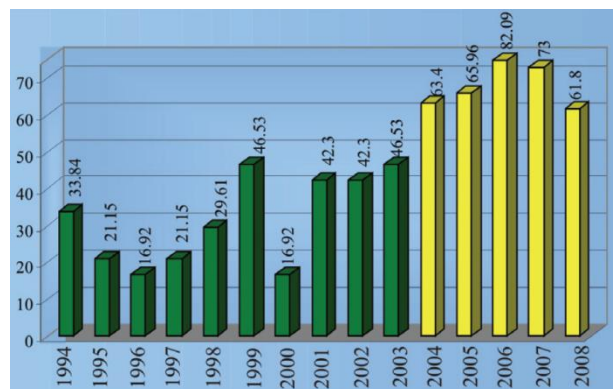


Figure 12. Annual AQI for HCHO in the period 1994.to 2008.

Calculated values for AQI relating to the mid-annual emission concentrations of soot are shown in the diagram in figure 14. The air quality in the Niš area determined by the air quality index relating to the mid-annual concentration of soot was in the "good" range in the period 1994 – 2003, and in the "moderate" range in the period 2004 – 2008.



**Figure 13.** Annual AQI for SO<sub>2</sub> in the period 1994.to 2008.



**Figure 14.** Annual AQI for soot in the period 1994.to 2008.

### 3.1.3. Number of citizens connected to remote heating

Remote heating in Niš is provided through two heating plants and twelve boiler houses. The number of households and public users connected to the remote heating is shown in table 3:

**Table 3.** Number of households and public users connected to remote heating

Heating plant or boiler house	Total power, MW	Number of connected households	Number of connected public users
Krivi Vir	128	16,487	1,061
Jug	66.75	5,788	1,270
Somborska	10.74	904	7
Čair	10.96	0	18
Faculty of Mathematics and Natural Sciences	6.652	170	8
Knjaževačka	2.6	257	3
Pantalej	1	137	0
Andreja	2.8	222	13
Mokranjčeva	3.35	347	12
Cara Uroša	1.86	116	3
Ledena Stena	1.5	156	12
Ratko Jović	1.6	97	2
Obilićev Venac	1.047	92	3
Pasi Poljana	0.55	5	0
<b>TOTAL</b>		<b>24,796</b>	<b>2,412</b>

The total number of households in the City of Niš, according to the census taken in 2002, was 85,269. 24,796 households are connected to remote heating, or around 29%. According to the census from 2002 the average Niš household has 2.92 members, making the number of citizens connected to remote heating around 72,404. Considering that the estimated population of Niš is 254,164, the percentage of citizens connected to remote heating is around 35%.

### **3.1.4. Percentage of connections to gas network**

Connection to the gas network in the City of Niš began 3 years ago. So far only heating plants Krivi Vir, with power of 128 MW, and Jug, with power of 66.75 MW, and an insignificant number of individual households have been connected. Compared to the overall installed power of the heating plants and boiler houses in the City which amounts to 239.4 MW, the percentage of central heating systems connected to gas networks is 81.34 %, which is very high.

However, if we look at the installed gas capacities in the City of Niš as compared to the overall heating facility power that needs to be provided, which is estimated at around 700 MW, the percentage of connection to gas networks according to the heating facility power is only 28%, which is insufficient. It is clear that the connection of settlements with individual housing units to the gas network, which is currently in progress, will contribute to the improvement of this situation.

### **3.1.5. Noise level**

The City of Niš is an area with considerable noise levels, as it is an area with a considerable intensity of road and railway traffic. Measuring the noise level and defining its timelines at specific measuring locations was conducted from 1995 to 1997, and then continued in 2007, 2008 and 2009 according to the JUS U.J6. 205 standard. Within the measuring locations measuring was conducted at measuring points selected according to the intended use of the area, in accordance with the Regulations on Permissible Environmental Noise Levels and the Yugoslav standard JUS U. J6. 090. "Community Noise Measurement".

The measurements included the following locations: Bulevar Nemanjića Street (Krive Livade-Krivi Vir-Duvanište), Bulevar Dr. Zorana Đinđića Street (Crveni Pevac-Ćele Kula), Voždova Ulica Street-General Lešjanina Street, Obilićev Venac-Cara Dušana Street, Bulevar 12. Februara Street (R. Jović settlement)-Šljaka settlement (Sarajevska Street), Bulevar Nikole Tesle Street (S. Sinđelić settlement)-Niš-\*Sofia Highway (B. Bjegović settlement), Bulevar Dimitrija Tucovića Street –Vojvode Putnika, Vojvode Gojka Street-D. Dimitrijevića Street-Mokranjčeva Street, Kosovke Devojke Street-Somborska Street, Knjaževačka Street, central part of Niška Banja.

Measurements in 2007 showed the following results: in the daytime measuring period the highest permissible noise level in open spaces was exceeded at 17 of a total of 44 measuring points, which expressed as a percentage is 27%; in the nighttime measuring period the highest permissible noise level was exceeded at 32 of a total of 44 measuring points, which expressed as a percentage is 73%.

The relevant noise level in the daytime period exceeded the permissible noise level at 26 of a total of 44 measuring points, which expressed as a percentage is 59%, while the relevant noise level in the nighttime period exceeded the permissible noise level at 41 of a total of 44 measuring points, which expressed as a percentage is 93%.

In the daytime measurement period the relevant noise level was in the range of 46 dBA to 73 dBA. The highest relevant noise level of 73 dBA was recorded at measuring point Ledena Stena – Post Office No 9. As regarding municipalities, three of five of the measuring points with the highest noise levels were in the Palilula Municipality. The lowest relevant noise level of 46 dBA was recorded at

measuring point Elementary School "Ivan Goran Kovačić". The lowest noise levels were recorded in the Niška Banja Municipality.

In the nighttime measurement period the relevant noise level was in the range of 40 dBA to 68 dBA. The highest relevant noise level of 68 dBA was recorded at the same measuring point as during the daytime measurement period – Ledena Stena – Post Office No 9. The highest noise levels (over 65 dBA) were recorded in the Palilula, Medijana and Crveni Krst Municipalities. In the nighttime measurement period the lowest relevant noise level of 40 dBA was recorded at measuring point Elementary School "Ivan Goran Kovačić". Once again the lowest noise levels were recorded in the Niška Banja Municipality.

The maximum noise levels for open spaces were exceeded in the daytime measurement period by up to 8 dBA, and in the nighttime measurement period by up to 13 dBA.

Considering the defined zones in keeping with the standard, by intended use of the areas where the measuring points are located, the relevant noise levels for the daytime period did not exceed the permissible levels at 18 measuring points. At the other measuring points the maximum permissible levels were exceeded by up to 18 dBA. The maximum exceeding of the permissible level during the daytime measuring period was recorded in the Medijana Municipality, in the immediate vicinity of school zones.

Measurements in 2008 showed the following results: in the daytime measuring period the highest permissible noise level in open spaces (65 dBA) was exceeded at 21 of a total of 52 measuring points, which expressed as a percentage is 41.48%; in the nighttime measuring period the highest permissible noise level (55 dBA) was exceeded at 39 of a total of 52 measuring points, which expressed as a percentage is 75%.

The relevant noise level in the daytime period exceeded the permissible noise level at 31 of a total of 52 measuring points, which expressed as a percentage is 59.62%, while the relevant noise level in the nighttime period exceeded the permissible noise level at 47 of a total of 52 measuring points, which expressed as a percentage is 90.58%.

In the daytime measurement period the relevant noise level was in the range of 51 dBA to 75 dBA. The highest relevant noise level of 75 dBA was recorded at measuring point Intersection of Generala Lešjanina and Knjeginje Ljubice. As regarding municipalities, three of six of the measuring points with the highest noise levels were in the Medijana Municipality, two in the Palilula Municipality and one in the Crveni Krst Municipality. During the daytime period the lowest relevant noise level of 51 dBA was recorded at three measuring points: Mavrova Street below St. Panteleimon's Church, Elementary School "Ivan Goran Kovačić" and the area between the „Ozren“ and „Partizan“ hotels. The lowest noise levels were recorded in the Niška Banja Municipality.

In the nighttime measurement period the relevant noise level was in the range of 40 dBA to 71 dBA. The highest relevant noise level of 71 dBA was recorded at the same measuring point as during the daytime measurement period – Intersection of Generala Lešjanina and Knjeginje Ljubice. The highest noise levels (over 65 dBA) were recorded in the Medijana (4 measuring points), Palilula (two measuring points) and Crveni Krst (one measuring point) Municipalities. In the nighttime measurement period the lowest relevant noise level of 40 dBA was recorded at measuring point Elementary School "Ivan Goran Kovačić". Once again the lowest noise levels were recorded in the Niška Banja Municipality.

The maximum noise levels for open spaces were exceeded in the daytime measurement period by up to 10 dBA, and in the nighttime measurement period by up to 16 dBA.

Considering the defined zones in accordance with the SRPS U.J6. 205 standard, by intended use of the areas where the measuring points are located, the relevant noise levels for the daytime

period did not exceed the permissible levels at 21 of the total number of 52 measuring points. At the other measuring points the maximum permissible levels were exceeded by up to 18 dBA.

The maximum exceeding of the permissible level during the daytime measuring period was recorded in the Medijana Municipality, in the immediate vicinity of school zones.

### 3.1.6. Radiation level

Of all the sources of radiation in Niš, particular attention needs to be paid to radioactive lightning rods, medical and non-medical radioactive radiation sources and radon gas.

Radioactive lightning rods are sources of mass radiation. These are devices with a source of gamma radiation that ionize air in a wide, cone-shaped zone above the tip. The ray clusters above the level of the lead shield are hazardous to people, so all structures above this level need to be at a distance of at least 80 meters from the radioactive lightning rod.

32 radioactive lightning rods have been installed on housing units in Niš, and 59 on commercial facilities. Removing the radioactive lightning rods is governed by the Regulations on the requirements for trade and use of radioactive materials, x-ray machines and other devices with ionizing radiation ("Official Gazette of FRY" No. 32/98). The problem of removing the radioactive lightning rods still exists, and the "Niš" Workers' Healthcare Institute conducted an inspection in the year 2000 at ten locations or so, and found radiation at the level of background radiation.

Medical radiation sources are present in medical institutions: City Hospital (Bulevar Dr Zorana Đinđića Street), Military Hospital (Bulevar Dr Zorana Đinđića Street), TBC clinic (Bulevar Dr Zorana Đinđića Street), Health Center (Vojvode Tankosića Street), Medicine of Labor Clinic (Dimitrija Tucovića Street) Pulmonary Clinic – Knez Selo, and many private diagnostic and dental practices.

Non-medical radioactive radiation sources, of significant power, are used in defectoscopy to check welding accuracy, etc. These radiation sources are far less protected and dissipate far greater radiation into the environment.

Radon and its descendants cause 49.5% of the radiation that the population is exposed to in nature. Radon is emitted from the ground, but the radiation levels in the air in open spaces vary greatly from location to location. By the Regulations on maximum permissible levels of exposure to ionizing radiation ("Official Gazette of FRY" No 32/98) the legislator provided for the following: "Intervention levels for chronic exposure to radon in apartments are equal to the annual mean concentration of  $200 \text{ Bq/m}^3$   $^{222}\text{Rn}$  in the air in newly-constructed apartments, and  $400 \text{ Bq/m}^3$   $^{222}\text{Rn}$  in the air in existing housing units." The department of labor hygiene and radiological protection of the Niš Workers' Healthcare Institute in preparing its "Detailed cartographic survey of radon concentrations" noted three zones of major health risk in the Niška Banja. The mean arithmetic values for radon concentration were ( $5626 \text{ Bq/m}^3$ ,  $5384 \text{ Bq/m}^3$  and  $1876 \text{ Bq/m}^3$ ).

Zones of increased risk, with lower levels, exist in the territory of the City of Niš as well. This was shown by ten or so pilot measurements conducted by the Niš Workers' Healthcare Institute in the territory of the Niš Municipality. The measurements ranged from  $35.9 \text{ Bq/m}^3$  to  $737 \text{ Bq/m}^3$ .

A study entitled "Electrical and magnetic fields of power transformers located in housing units" was conducted in the Niš area, covering so-called ELF radiation. The obtained results show that the magnetic induction in certain apartments exceeded  $30 \mu\text{T}$  ( $B=30\mu\text{T}$ ). Such magnetic fields of power transformers with voltage level of 10/0.4 KV can have a negative effect on the health of the people living in the apartments directly above the rooms in which the power transformers are located.

## 3.2 SOIL

### 3.2.1. Plough-land and land with permanent crops

The main resource in agricultural production is **soil**. The total surface area of farming land in the territory of the City of Niš in 2004 was 36,996 hectares, just over 1% less than in 1992 (37,181 ha). The problem lies in the fact that the farming land is fragmented, since 87.7% (2004), and 87.8% (2002) respectively of the overall area of farming land is owned by individual farmers and a symbolic 2.3% by cooperatives that own larger lots of land, which is a prerequisite for more productive output. In the structure of the farming land the majority is made up of plough-land and gardens, 58.7% (2004), grazing land, 20.4% and vineyards, 10.5%. In the plough-land and garden category 57.8% of the area is taken up by grains.

The distribution of agricultural land in the administrative territory of the City shows a concentration of farming land in the western part of town (Palilula Municipality) by the Morava River and in the north-eastern part (Pantelejev Municipality) in Vrežina, Malča, Matejevac, Knez Selo, Jasenovik, Vrelo, Pasjači, Oreovac, where it takes up over 70% of the area of the cadastral municipalities. In the central part, outside of the broader city area, farming land takes up an average of 50 - 70%, while in the northern and eastern parts due to the configuration of the land farming land takes up less than 35% of the total area of the land.

**Table 9.** Overview of land areas by soil capability in the territory of the City of Niš

Form of ownership	Farming land (ha)												Total farming land	
	Arable farming land								Total arable land		Grazing land			
	Plough-land		Orchards		Vineyards		Meadows							
	Stat	Kat	Stat	Kat	Stat	Kat	Stat	Kat	Stat	Kat	Stat	Kat	Stat	Kat
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Private	21392	21441	1829	1504	3901	3819	1785	1741	28907	28480	3014	2521	31921	31001
State-owned	337	3146	120	243	60	257	62	168	579	3815	42	2566	621	6381
?	21729	24587	1949	1747	3961	4076	1847	1909	29486	32295	3056	5087	32542	37382
Unorganized	-	-	-	-	-	-	-	-	-	-	4454	-	4454	-
??	21729	24587	1949	1747	3961	4076	1847	1909	29486	32295	7510	5087	36996	37382

In the period from 1996 to 2005 plough-land and gardens occupied between 22,000 and 21,600 ha (Table 10). With regard to the overall area of farming land, plough-land took up 59 %.

**Table 10.** Overview of plough-land in the period from 1996 to 2005 in ha

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
22,032	21,868	21,812	21,755	21,593	21,547	21,729	21,677	21,598	21,607

The main goal of land fertility testing is determining the content of nutrients in the soil, as follows: pH (acidity), electrochemical; CaCO<sub>3</sub>, volumetric; humus, according to Kotzaman; P<sub>2</sub>O<sub>5</sub>,

according to the AL-method;  $K_2O$ , according to the AL-method; mineral nitrogen, according to Bremen. These testings enable the making of correct decisions regarding the fertilization system, rational use of mineral fertilizers and proper cultivation of crops. Based on the results the proper uses for the land are determined, so that the use of the land can be defined for each village or cadastral municipality, followed by selecting, determining the quantities and proposing the manner and schedule for use of mineral fertilizers.

In 2009, in 50 cadastral municipalities, on a total area of 1241.62 ha, 1537 samples were taken from 278 households for the purpose of soil testing.

The main goal of a thus defined soil fertility testing system is to ensure quality use of mineral fertilizers and all agrochemicals, and to provide high and stable yield of good quality and with the least possible investment of material, energy and labor. Proper use increases efficiency, protects the agricultural system, and the environment and the biosphere in general.

The main comparative advantage of the Niš land fund is diversity according to type, altitude and manners of exploitation, and extremely low pollution levels. The fragmentation of the farms imposes establishing highly profitable forms of agricultural production (vegetables, fruits, tobacco, cattle farming and all forms of organic production). The diversity of the Niš land fund provides quality prerequisites for the development of absolutely all forms of agricultural production, primarily directed towards the local market. Furthermore, the fact that the soil is not polluted by heavy metals enables the fastest and most efficient conversion from conventional to organic farming, directed towards the requirements of the local market.

### **3.2.2. Arable land affected by erosion**

Erosion processes in the territory covered by the Spatial Plan for Niš can be seen in various forms. They are highly varied, and with different manifestations. They were caused by the relief, the hydrography, the state of the vegetation, the characteristics of the land and the underlying surfaces and absence of protective measures. They can be seen in the valleys and at the mouths of tributaries of the Nišava River: the Gabrovac, Kutina, Jelašnica and Kunovica Rivers, the Radostina, Malčanska and Humska Rivers and other smaller tributaries, and the products of deterioration of rocks are found in the form of non-layered, poorly sorted sediments. They are quite wide-spread and are mostly found in terrains with gentler slopes along the rim of the Niš basin: Bubanjski Dol, Niška Banja, Vinik, Matejevac, Knez Selo, etc. Apart from natural factors, a considerable role in erosion, especially on steeper terrains, is played by man, as the manner of utilization of the land and the farming thereof is not adapted to the other natural factors that affect the onset and causing of erosion.

### **3.2.3. Flooded land**

Construction works on the regulation of river flows and the development of riverbeds against the effects of high waters are conducted to form a system for protection of farming land and the facilities in the settlements through which such waters flow.

On the South Morava River regulation works were conducted at Mramor, in the highway zone, and on the Nišava River in the sections from the mouth of the Nišava into the South Morava

River to the railway bridge near Popovac, from the bridge near Popovac to the railway bridge on the Belgrade-Niš railroad, from the railway bridge on the Belgrade-Niš railroad to the Most Mladosti bridge, from the Most Mladosti bridge to the mouth of the Gabrovac River and from the mouth of the Gabrovac River to the boundaries of the Plan. The constructed flood defense structures and the conducted works on the riverbed do not entirely meet the safety and protection requirements, particularly due to the discontinuity of the protective embankments in places, the forming of pockets and broader unprotected areas. In certain sections the Nišava riverbed has been altered by the forming of illegal dumps, the appearance of sand islands under the influence of nature and the human factor, as well as by the fast and uncontrolled growth of vegetation.

Torrent flow regulation has been conducted by carrying out regulation works, on the Jelašnica and Gabrovac Rivers, on the Humski, Kovanluk and Rujnik Springs, covering around 3,238 m in total, by mounting transversal structures in the form of cascades, partitions and belts.

### 3.2.4. Forest areas

The City of Niš and its surroundings have 15147 ha of forest land. Of this overall area, 10287 ha (65 %) of forest land is privately owned, and 4860 ha (35 %) is state-owned. This tells us that a large number of forests are privately owned, meaning that how such forests are managed will greatly affect all the benefits that such forests yield. On the basis of the current situation regarding private forests, it can be said with certainty that they are for the most part left to their owners to manage based on their own requirements and as they see fit.

**Table 11.** Total wood volume in state-owned and private forests:

Private forests	State-owned forests	Total
463 909 m <sup>3</sup> / 72 %	183 527 m <sup>3</sup> / 28 %	647 436 m <sup>3</sup>

**Table 12.** Total wood volume per hectare in state-owned and private forests:

Private forests	State-owned forests
71.2 m <sup>3</sup> /ha	111.6 m <sup>3</sup> /ha

The majority of the area under forests is in the territory of the Niška Banja and Crveni Krst Municipalities; a smaller part of the forest land can be found in the Pantelej and Palilula Municipalities, while the Meridijana Municipality has no areas under forests, and no farming land.

Wood volume from the existing forest resources is mainly used as fuel wood for the requirements of the urban and rural population. Small quantities are used in the wood processing industry and for local requirements, after processing in several sawmills in some of the villages.

### 3.2.5. Deforestation intensity

As overview of deforestation intensity for the analyzed 4-year period based on tree markings from eight years ago has the average value of 2,391 m<sup>3</sup> (Table 13).

**Table 13.** Felling in private forests 8 years back based on tree markings

1997	1998	1999	2000	average
1530 m <sup>3</sup>	2590 m <sup>3</sup>	2790 m <sup>3</sup>	2363 m <sup>3</sup>	2391 m <sup>3</sup>



The data from 2004 show that only 1,745 m<sup>3</sup> of hardwoods and 27 m<sup>3</sup> were felled, indicating decreased interest in felling.

Taking into account that not only marked trees, but also a large number of trees without prior marking are felled in private forests, the conclusion that the forest resources are decreasing is clear.

**Table 14.** Unlawful felling in private forests 8 years back

1997	1998	1999	2000	average
288 m <sup>3</sup>	544 m <sup>3</sup>	382 m <sup>3</sup>	373 m <sup>3</sup>	397 m <sup>3</sup>

If the average annual recorded wood volume from unlawful felling is added to the performed annual tree marking (in the period 1997-2000), the mean annual volume increment is exceeded by 1%, clearly indicating that in this period the felling rate was higher than the wood volume increment, meaning that the state of the forests has been degraded during this period.

### 3.2.6. Area of urbanized and non-urbanized regions

According to the Statute of the City of Niš ("Official Gazette of the City of Niš", No 26/2002 and 92/2004), the territory of this city consists of five urban municipalities making up Niš, and 70 settlements with their cadastral municipalities.

The urban area of Niš includes: a) the City of Niš with its several-century-long urban tradition, b) ten semi-urbanized settlements with non-farming population c) eight suburban settlements of the urban zone with farming population undergoing long-term village urbanization. Of the total territory of the City of Niš consisting of 59,678 ha, the urban area occupies 10,423.36 ha, i.e. 6,428.64 ha of development land and 3,994.72 ha of agricultural land.

Rural non-urbanized settlements occupy: 49254.64 ha.

The basis for the analysis of the current situation was the population and housing-units census from 2002, according to which the city area in the 5 urban municipalities had a population of 250,518 in 85,269 households. Of the total number of housing units 68,992 or 73% were in the City, while 26,138 or 27% of the housing units were in suburban settlements and villages.

The residential area covers a total of 5,434,21 ha. Of the total living area, the City residential area takes up 3,617,06 ha, or 66,5%, while the rural residential area takes up 1,817.15 ha, or 33,5%.

## 3.3. WATER

### 3.3.1. Availability of monitored drinking water

The water supply for the City of Niš is maintained through water supply systems:

- The regional waterworks system Ljuberađa-Niš with water intakes "Krupac"; "Mokra"; "Divljana" and "Ljuberađa".

- Waterworks system Studena –Niš with water intake Studena;
- Groundwater source with artificial recharge Medijana;
- Morava waterworks with water intakes: Pešter, Toplik and Miljkovac Well 2;
- Waterworks system “Medijana”; Waterworks system “Studena”;

The Morava waterworks, as part of the Niš water supply system, supplies the following settlements with drinking water: Miljkovac, Paljina, Berčinac, Gornja Toponica, Donja Toponica, Donja Trnava, Vrtište, Trupale and Supovac. The water is provided through catchments on the “Pešter” and “Toplik” resurgences and a well constructed in the alluvium of the Toponica River. The water from these sources is brought to the reservoir of pumping station “Miljkovac”, and from there distributed directly to the distribution pipeline of the Morava waterworks. The average water volume from the Miljkovac source is 10-20 l/s.

“Medijana” is a groundwater source of the existing Niš water supply system, at the “Medijana” site, where exploitation began in 1937. It is located to the east of Niš, between the Nišava River and Bulevar Svetog Cara Konstantina Street. The source is an alluvial plain, with average width of around 2 km, occupying around 250 ha on the left bank of the Nišava River and consists of a system for artificial recharge of the source. In its full capacity this source provides the City with 400 to 550 l/s.

Water supply system „Studena“ is fed from the water intake “Golemo Vrelo“. This is a resurgence, above the Donja Studena village. The exploitation of this source began in 1962. This source, taking the overall quantity of water from all springs, yields from 240 to over 400 l/s. Three special water-collection structures have been constructed on this water intake from which pipelines direct the water to the collection unit.

The Krupac source springs from a rocky structure near the Krupac village, in the north-eastern part of the Bela Palanka Basin. It is one of the best-yielding resurgences of Eastern Serbia. Water flow has been recorded in the range of 118 l/s to 4000 l/s. The system has been included in the exploitation system since mid-1989. “Krupac“ is exploited at maximum rate of 900 l/s.

The Mokra source is in the immediate vicinity of the village of Mokra, at the foot of the Suva Mountain. A water catchment has been constructed at this source. The water is gravity-fed to the joint pipeline. The mean multi-annual yield of this spring is 310 l/s.

The “Divljana“ source is located on the left bank of the Koritnica River, opposite the village of Divljane, in the immediate vicinity of the Bela Palanka – Babušnica road. A water catchment has been constructed at this spring, and the water is gravity-fed to a disconnection chamber. The multiannual mean flow is 240 l/s.

The sources at Ljuberađa are quite specific and are scattered by type. This is a system of sources distributed along a stretch of several kilometers, in the valley of the Lužnica River. A total of 11 individual sources have been registered on the left and right side of the river. Five sources have been fitted with catchments, i.e. five closed-type water-collection structures have been constructed. For the requirements of the City of Niš 450 l/s is exploited from the Ljuberađa source.

**Table 15.** Characteristics of the water supply sources

Source	Capacity Q (m <sup>3</sup> /s)	Location/ distance	Chemical and quality after chlorination
<b>A. NIVOS – Integrated water supply system</b>			
a. Luberada – Niš regional water supply system			
<b>a.1. Ljuberađa</b>	0.45 – 5.5	L = 70 km	100%
<b>a.2. Divljana</b>	0.05 – 3.0	L = 48 km	100%
<b>a.3. Mokra</b>	0.12 – 4.0	L = 44 km	100%

<b>a.4. Krupac</b>	0.07 – 9.5	L = 30 km	100%
b. Studena – Niš water supply system			
<b>b.1. Studena</b>	0.22 – 0.34	L = 17 km	100%
c. Medijana groundwater source with artificial recharge			
<b>c.1. Medijana</b>	0.10 – 0.50	city	100%
<b>B. MOVOS</b>			
a. Morava waterworks	0,02		
<b>a.1. Pešter</b>		L = 22 km	Out of commission
<b>a.2. Toplik</b>		L = 23,5 km	Out of commission
<b>a.3. Miljkovac Well 2</b>		L = 24 km	100%

Therefore the overall maximum water intake from all sources that can be distributed to the consumers in Niš is 2,870 l/s., or 247,968 m<sup>3</sup>/day.

In the territory covered by the Spatial Plan for Niš, of a total of 71 settlements, 65 settlements are supplied with water from public water supply systems. 249,433 inhabitants or 98.6% of the total number of 250,518 inhabitants use water from the public waterworks. 91.8% of the population is connected to the water supply network of the City of Niš.

**Table 16.** Rural households in the territory of the City of Niš connected to the city waterworks

Village	No of connections per village	Village	No of connections per village
Prva Kutina	392	Lalinac	447
Suvi Do	175	Miljkovac	144
Jelašnica	480	Pačjina	93
Čukljenik	113	Berčinac	91
Donja Studena	157	Gornja Toponica	330
Donji Matejevac	81	Donja Toponica	289
Gornja Vrežina		Donja Trnava	316
Bubanj Selo	175	Supovac	294
Gornje Međurovo	208	Naselje Kitice	65
Donje Međurovo	366	Mezgraja	223
Čokot	291	Vrtište	322
Novo Selo	1.164	Trupale	648
Lalinske Pojate		Čamurlija V. N.	210
Gornji Komren		Popovac	691
Medoševac	746	Pasi Poljana	637

The remaining 1087 inhabitants, or 0.4 %, solve the problem of water supply in several ways: by individual exploitation of groundwater through wells; by catchment of local sources for one household; though public drinking fountains or through local waterworks constructed for the requirements of several households. All these manners are characteristic for rural and weekend settlements.

31 settlements with a total of 231 000 inhabitants are supplied from the Niš city waterworks. Of this number around 226 380 consumers or 98 % are connected to the waterworks. Water from the “Morava” system is used by 11 settlements with a total of 7 301 inhabitants. Of this number 6 790 inhabitants or 93 % are connected to the waterworks.

The situation in the other settlements is less favorable. Of the total number of 11 130 inhabitants in 22 settlements, only 5 120 inhabitants or 46% are supplied from the public waterworks.

8 settlements, i.e. 1087 inhabitants do not have public waterworks.

### 3.3.2. Length of constructed water supply network

The total length of constructed water supply network in the territory of Niš is 875 km. There are 49.429 connections to the waterworks.

**Table 17.** Waterworks by age and percentage of share by age

Age in years	Length in km	Share by age in %
5	164.2	19.16
10	37.5	4.37
15	4.6	0.54
20	63.2	7.37
25	73.4	8.57
30	30.0	0.004
> 30	466.5	54.43
Indeterminate age	47.6	5.55
Total length of network	857	100

Regarding altitude, the territory of the City is divided into three water supply zones. All three zones have constructed supply networks (ring type), and accompanying facilities (reservoirs, pumping stations) and devices.

Rural settlements that are not connected to the city system but do have public waterworks have a water supply network primarily of the branched type, and in a lesser measure of the ring type, complete with reservoirs and pumping stations.

The settlements that do not have public waterworks are oriented towards local sources and wells.

### 3.3.3. Microbiological quality of drinking water

Hygienically and medically sound drinking water is one of the basic health requirements. Based on data obtained by annual examination of drinking-water quality central water supply systems are categorized as follows:

- I. Good quality central water supply systems – water supply systems with less than 5% of microbiologically poor-quality samples and less than 20% of physically and chemically poor-quality samples.
- II. Central water supply systems that are only physically and chemically of poor quality - water supply systems that are physically and chemically of poor quality in over 20% of tested samples.
- III. Central supply systems that are only microbiologically of poor quality - water supply systems that are microbiologically of poor quality in over 5% of tested samples.
- IV. Central supply systems that are physically and chemically and microbiologically of poor quality - water supply systems that are physically and chemically of poor quality in over 20% of tested samples and microbiologically of poor quality in over 5% of tested samples.

Collecting the above data and interpreting the results of the analysis thereof is conducted in accordance with the laws and bylaws in the field of health and the environment.

Regarding the sources of the data, it was gathered from the programs that public health institutions/institutes are legally obliged to implement. In the territory of Niš water quality examination and reporting on its hygienic and health quality in accordance with the current regulations is within the competence of the Niš Public Health Institute.

In 2007 the percentage of physical and chemical, and microbiological poor quality of drinking water in the Niš water supply systems was as follows:

- Physical and chemical poor quality of drinking water 0.33%.
- Microbiological poor quality of drinking water 0.06%.

In 2008 the percentage of physical and chemical, and microbiological poor quality of drinking water in the Niš water supply systems was as follows:

- Physical and chemical poor quality of drinking water 1%.
- Microbiological poor quality of drinking water 0.18%.

Therefore the Niš water supply systems are in category I. Good quality central water supply systems, i.e. water supply systems with less than 5% of microbiologically poor-quality samples and less than 20% of physically and chemically poor-quality samples.

#### 3.3.4. Length of constructed sewage system

All wastewaters in Niš today are evacuated through three separate pipes into the Nišava River. The current sewage system was for the most part constructed according to the general system, and urban, industrial and atmospheric water is transported together. This is primarily true of the central area of the City, where there is a significant number of large-size main collectors.

Construction of a separate sewage system type in Niš is in the initial stages. It is being developed partially, mostly towards the regions in which planned development is being undertaken.

Collection and removal of the Niška Banja wastewaters is conducted via a separate sewage system which services most of the settlement. The content of the wastewater sewage system for the Niška Banja and the settlements along the way, "Brzi Bord" and "Nikola Tesla", in which construction of a separate-type sewage system has begun, is discharged through a joint pipeline into the city sewage system.

The atmospheric waters for Niš and the Niška Banja are evacuated directly into the Nišava River.

**Table 18.** Length of constructed sewage system (general system) by age

Age in years	Length in km	Share by age in %
5	27.5	6.43
10	-	0.00
15	0.9	0.15
20	82.4	19.34
25	95.6	22.43
30	148.0	34.75
> 30	39.0	9.15
Indeterminate age	33.0	7.74
Total length of network	426.0	100

Other settlements do not have a constructed water management infrastructure. Furthermore, households are not equipped with plumbing and sewer installations and sanitary equipment. Wastewater removal is conducted along the surface, by free flow across the terrain directly into the watercourse or into seepage or absorbent pits for which preexisting bored wells or primitively constructed facilities are used. For the most part these facilities do not fulfill the basic technical and hygienic requirements and safety measures, and the emptying thereof is uncontrolled, through drainage into the underground. Such wastewater evacuation greatly affects the degradation of the soil quality and increases the pollution level of surface and ground waters.

The length of the constructed atmospheric sewage system (data from public utilities company JKP "Naissus") is 35 km. The number of inhabitants connected to the Niš sewage system is 193,466, or 77%. The number of sewage trucks at the disposal of JKP "Naissus" Niš is 11.

### 3.3.5. Quantity of treated wastewaters

Water pollution and problems related to the limited possibilities of utilizing natural resources require improving the monitoring of the discharge of wastewaters and their quality, quantity and flow.

The significant characteristics of the Niš wastewaters are their quantity and quality. The quantity of wastewaters (from households, industrial sources and precipitations) is  $Q_{\text{waste}} = 1.200 \text{ l/s}$ .

The following characteristics of the wastewaters are evaluated:

- mean organic load (BPK5) =  $20.000 \text{ kg day}^{-1}$
- mean BPK5 concentration for calculation – dry period =  $160 \text{ gm}^{-3}$
- mean SM concentration for calculation – dry period =  $200 \text{ gm}^{-3}$

The wastewater issue of the City of Niš has not been resolved since they are evacuated through several sewage outlets directly into the recipient Nišava. When priorities and guidelines for constructing wastewater purification facilities were defined within the framework of the draft document entitled Water Management Foundations of the Republic of Serbia, the city of Niš as a concentrated source of pollution, was classified as first-degree priority for construction of such a facility. This envisages biological purification of up to BPK<sub>5</sub> effluent of  $20 \text{ gO}_2 \text{ m}^{-3}$ . The Nišava River between Niš and its mouth, is classified according to quality criteria as - sufficient:  $\text{BPK}_5 < 7 \text{ g m}^{-3}$ , i.e. class 3. These criteria should be addressed when selecting the wastewater purification technology for Niš (urban and industrial areas).

EU Directive 91/271/ECC and its 98/15 EEC Addendum govern the issue of wastewater treatment in urban areas. All member states are required to implement regulations for all urban and industrial wastewater and to construct sewage systems and wastewater treatment facilities for the treatment of communal wastewater from all urban areas over 2000 ES by the year 2005. As a general rule the degree of purification should include secondary (biological) treatment according to the parameters set forth in Table 21:

**Table 19.** Effluent quality criteria

Parameters	Concentration	Degree of purification %
BPK <sub>5</sub> at 20°C w/o nitrification	$25 \text{ gO}_2 \text{ m}^{-3}$	70 - 90
HPK, dichromatic method	$125 \text{ gO}_2 \text{ m}^{-3}$	75
Total suspended matter	$35 \text{ g m}^{-3}$	90

### 3.3.6. Surface water quality

Monitoring the water quality of the Nišava River in the territory of the City has been controlled since 2008 by the Niš Public Health Institute.<sup>32</sup> The quality indicators for the systematic monitoring of the surface water quality of the Nišava River were examined at the following measuring points: Nišava River – village of Prosek – dam; Nišava River at the water intake of public company “Naissus”; Nišava River 100 m upstream from the point of discharge of the main and ancillary sewage collector in Niš; Nišava River 300 m downstream from the point of discharge of the main and ancillary sewage collector in Niš; Nišava River 100 m upstream of its flow into the South Morava River.

Analysis of the physical and chemical, toxicological and bacteriological quality parameters of the surface waters was carried out by applying the standard analytical procedures<sup>33</sup> and documented methods of the Niš Public Health Institute – accredited by the Accreditation Board of Serbia.<sup>34</sup>

The conducted measurements of the parameters for the water in the Nišava River at the given profiles in 2008 and part of 2009, show the following:

*a. Nišava River – village of Prosek – dam.* Based on the measured values for dissolved oxygen, pH, BPK5, HPK, suspended matter and residue on evaporation of filtered water, the Nišava River is in the first watercourse class, according to the Degree on Water Classification. According to the Regulations on Hazardous Substances in Waters, the Nišava River is in the first and second class based on the concentrations of ammonium ions and nitrites, while the concentration of nitrates is higher than the values defined for the third and fourth class. The measured concentrations of lead, chrome, nickel, zinc, copper and iron put the Nišava River in the first and second watercourse class, while the concentration of cadmium corresponds to the third and fourth class according to the Regulations on Hazardous Substances in Waters. The bacteriological analysis determined the presence of coliform bacteria (240 000/L *E. coli*), so based on this parameter the river is in the fourth class, according to the Degree on Water Classification.

*b. Nišava River at the water intake of public company “Naissus”.* The values for dissolved oxygen, pH, BPK5, HPK, suspended matter and residue on evaporation of filtered water put the Nišava River in the first watercourse class, according to the Degree on Water Classification. According to the Regulations on Hazardous Substances in Waters, the Nišava River is in the first and second class based on the concentrations of ammonium ions. The concentration of nitrites corresponds to the third and fourth class, while the concentration of nitrates is higher than the values defined for the third and fourth class. The measured concentrations of lead, chrome, nickel, zinc, copper and iron put the Nišava River in the first and second watercourse class, while the concentration of cadmium corresponds to the third and fourth class according to the Regulations on Hazardous Substances in Waters. The bacteriological analysis determined the presence of coliform bacteria (over 240 000/L *Citrobacter sp.*), so based on this parameter the river is in the fourth class, according to the Degree on Water Classification.

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<sup>32)</sup> By the Decree on Watercourse Classification and the Decree on Water Classification in the Republic of Serbia watercourses are classified as 1st, 2nd a, 2nd b 3rd and 4th category according to the determined boarded values of the quality indicators. Categorization is performed on the grounds of the following indicators: suspended matters, total dry residue, pH, dissolved oxygen, BPK5, degree of saprobity (Liebman), degree of biological productivity, most probable count of coliform bacteria, visible waste matter, noticeable color, noticeable odor, oxygen saturation % O<sub>2</sub>, HPK, toxic substances and degree of radioactivity (Degree on Classification of the Waters of Inter-Republic Watercourses, International Waters and Waters of the Sea Coast of Yugoslavia, Official Gazette of SFRY 6/78).

<sup>33)</sup> Standard methods for examining the hygienic quality of water, Federal Health Protection Office, 1990 and “Standard Methods for the Examination of Water and Wastewater”, 20<sup>th</sup> Edition, APHA, AWWA, WEF, 1998.

<sup>34)</sup> Results of the examination were interpreted in accordance with the current legislation – Regulations on Hazardous Substances in Waters (Official Gazette of FRS No 31/82) and the Degree on Classification of the Waters of Inter-Republic watercourses, International Waters and Waters of the Sea Coast of Yugoslavia (Official Gazette of SFRY No 6/78).

c. *Nišava River 100 m upstream from the point of discharge of the main and ancillary sewage collector in Niš.* Based on the measured values for pH, BPK5, HPK, and suspended matter, the Nišava River is in the first watercourse class, according to the Degree on Water Classification. Based on the values for dissolved oxygen and residue on evaporation of filtered water the Nišava River is in the second, also permissible watercourse class. According to the Regulations on Hazardous Substances in Waters, the Nišava River is in the first and second class based on the concentrations of ammonium ions. The concentration of nitrites corresponds to the third and fourth class, while the concentration of nitrates is higher than the values defined for the third and fourth class. The measured concentrations of lead, chrome, nickel, zinc, copper and iron put the Nišava River in the first and second watercourse class, while the concentration of cadmium corresponds to the third and fourth class according to the Regulations on Hazardous Substances in Waters. The bacteriological analysis determined the presence of coliform bacteria (over 240 000/L *Citrobacter* sp.), so based on this parameter the river is in the fourth class, according to the Degree on Water Classification.

d. *Nišava River 300 m downstream from the point of discharge of the main and ancillary sewage collector in Niš:* Based on the measured values for pH, HPK, suspended matter and residue on evaporation of filtered water, the Nišava River is in the first watercourse class, according to the Degree on Water Classification. Based on the values for dissolved oxygen the Nišava River is in the second, also permissible watercourse class. The value of BPK5 puts the Nišava River in the third watercourse class, according to the Degree on Water Classification. According to the Regulations on Hazardous Substances in Waters, the Nišava River is in the first and second class based on the concentrations of ammonium ions and nitrates, while the concentration of nitrites is higher than the values defined for the third and fourth class. The measured concentrations of lead, cadmium, chrome, nickel, zinc, copper and iron put the Nišava River in the first and second watercourse class. The bacteriological analysis determined the presence of coliform bacteria (over 240 000/L *E. coli*), so based on this parameter the river is in the fourth class, according to the Degree on Water Classification.

e. *Nišava River 100 m upstream from the flow into the South Morava River.* Based on the measured values for pH, HPK, suspended matter and residue on evaporation of filtered water, the Nišava River is in the first watercourse class, according to the Degree on Water Classification. Based on the values for BPK5 the Nišava River is in the second, also permissible watercourse class. The value of dissolved oxygen puts the Nišava River in the third watercourse class, according to the Degree on Water Classification. According to the Regulations on Hazardous Substances in Waters, the Nišava River is in the first and second class based on the concentrations of ammonium ions. The concentrations of nitrates and nitrites are higher than the values defined for the third and fourth class. The measured concentrations of lead, chrome, nickel, zinc, copper and iron put the Nišava River in the first and second watercourse class, while the concentration of cadmium corresponds to the third and fourth class according to the Regulations on Hazardous Substances in Waters. The bacteriological analysis determined the presence of coliform bacteria (over 240 000/L *Citrobacter* sp.), so based on this parameter the river is in the fourth class, according to the Degree on Water Classification.

The WQI values in the samples taken from the Nišava River are between 56 index points (Nišava River 100 m upstream from the flow into the South Morava River) and 72 index points (Nišava River – village of Prosek – dam and Nišava River at the water intake of public company “Naissus”). Based on the WQI values, the Nišava River at measuring points village of Prosek – dam and water intake of public company “Naissus” is in the category of very good quality, while at the measuring points 100 m upstream and 300 m downstream from the point of discharge of the main and ancillary sewage collector in Niš and 100 m upstream from the flow into the South Morava River it is in the category of good quality.

The following conclusions can be drawn from the results of testing the surface water quality



of the Nišava River:

- Results of the physical and chemical analysis show elevated values of nitrates and nitrites in almost all the samples. In the lower course of the Nišava River the value of dissolved oxygen was lower than the permissible value for the defined watercourse class.
- The concentrations of heavy metals in all the samples were within the defined class, except for the concentration of cadmium which was elevated in four of the samples.
- The bacteriological testing determined an elevated number of coliform bacteria in all the samples taken from the Nišava River, except at the measuring points village of Prosek – dam and water intake of public company “Naissus”, where the values for the coliform bacteria were within the defined class.
- Based on the WQI values the water in the Nišava River at measuring points village of Prosek – dam and water intake of public company “Naissus” is in the category of very good quality, while at the other measuring points (upstream and downstream from the collector and before the flow into the South Morava River) it is in the category of good quality.
- Based on the WQI values the water in the Nišava River at measuring points village of Prosek – dam and water intake of public company “Naissus” is in the category of very good quality, while at the other measuring points (upstream and downstream from the collector and before the flow into the South Morava River) it is in the category of good quality.

The general conclusion is that the sanitary condition of the Nišava River, regarding biological quality, is unsatisfactory during most of the year. A decrease in values is particularly noticeable through Niš and down to the mouth of the river, into the South Morava River. This is understandable, as Niš is the largest “point” polluter in the course of this river.

### 3.4. BIODIVERSITY STATUS

#### 3.4.1. Town greenery

The quality and availability of greens is one of the ecological indicators of great importance to the environment of a town and the health of the population. Greenery, with its presence, color, smell and seasonal changes, is considered to have a positive effect on the population and the quality of life in a town. Greenery at less than a 15-minute walk from the living place is considered an indicator of good quality of the urban environment.

The optimum ratio in towns should be around 45 to 65 m<sup>2</sup> of public greenery per inhabitant, or else it should cover around 10% of the overall territory of the town. In large European cities the amount of greenery per inhabitant in optimum conditions is 7-15 m<sup>2</sup>, and in our country 3-5 m<sup>2</sup>.

The largest complexes of greenery in Niš are Bujanj, the Medoševac canal, the Apelovac protective forest – above the brewery and the area of the Niš fortress. There are also exceptions such as ten or so streets lined with birches (Sremska, Svetozara Markovića), ash trees (Prvomajska), Vožd Street, platans (Bulevar Nemanjića), lindens (Knjaževačka) and others. These exceptions also include a partially landscaped and greened newly constructed block, which has partly endured through being partially established and then completely left to fate and the parking of vehicles.

The balance of greenery includes the current protective forests on Delijski Vis, above Niška Banja and the areas along the banks only in principle, as they have over time been felled and usurped and destroyed and thus rendered unfit for their intended purpose.

The state of the greenery in the City of Niš is as follows:

• Parks	141,943 m <sup>2</sup>
• Neglected parks	1,135,000 m <sup>2</sup>
• Squares	36,813 m <sup>2</sup>
• Memorial areas	184,915 m <sup>2</sup>
• Linear greenery (m <sup>1</sup> = m <sup>2</sup> )	36,000 m <sup>2</sup>
• Memorial and protective park forests	1,311,908 m <sup>2</sup>
• Greenery in blocks	110,000 m <sup>2</sup>

The gross area of the greenery in the City of Niš is 261,943 m<sup>2</sup>, or around 1.19 m<sup>2</sup> of greens per inhabitant, which is less than the average in Serbia. The state of the greenery in the City of Niš can be evaluated as follows: very small green areas per inhabitant, insufficient care put into the revitalization of existing park areas, especially Čair and the Fortress, destruction of greenery by traffic, i.e. improper parking of vehicles and lack of a Program and annual plan for maintaining the greenery.

### 3.4.2. Protected Areas

*Sićevec Gorge (Sićevačka klisura)* is protected by the Decree on Protection of Natural Park (Official Bulletin of the Republic of Serbia No. 16/2000), and is categorized in the second category as a Natural Park. It is located 15 km east of Niš. Its length is 17 km (from the village Dolac to the village Prosek), and in its narrowest place, it is 150 m wide. Its total area is 7,746 ha, of which 5,559 ha are in the area of the Niš municipality, in parts of the cadastre municipalities of Kunovica, Ravni Do, Prosek, Jelašica, Sićevo, Oreovac and Ostrovica. The composite gorge of Sićevica was cut by the intense force of the river Nišava. The limestone terrain enabled the forming of a large number of surface and underground karst relief forms. The gorge is one of the most significant refugial areas in our country, where 20-40 endemic species are present per unit of 10 km<sup>2</sup>. The most significant plant species are the following: *Ramonda nathaliae*, *Ramonda serbica*, *Hypericum boissierii*, *Salvia officinalis* (sage). The most significant animal species include: *Aquila chrysaetos* (golden eagle), *Neophron percnopterus* (egyptian vulture), otter, weasel, muskrat, stoat, wildcat, fire salamander...

A special nature reserve, protected by the Decree on Protection of Special Nature Reserve *Jelašnica Gorge* (Official Bulletin of the Republic of Serbia No. 9/95) is categorized in the first category of protection. The area of the special reserve is 115,72,72 ha, of which 20,49,59 ha are privately owned. 57,27,84 ha are owned by the state and 37,59,25 ha are in public ownership. It is 1500 meters long, and its maximal width is 30 meters. In terms of administration, it belongs to the area of the villages Jelašnica and Čukljenik. The river Studena, more recently known as the river Jelašnica, cut this lively gorge into the slopes of the Suva Planina mountain. One of the rare uninhabited gorges in our country. In the narrowest part of the gorge is the Ripaljka waterfall which is the mouth of the only tributary of the aforementioned river. The special significance of the Jelašnica Gorge lies in the rare and endangered plant and animal species. 65 plant species in the gorge are endemic, the most significant amongst them being Tertiary relicts *Ramondia serbica*, *Ramondia nathaliae* and *Achillea serbica*. In the gorge and surrounding area, the presence of over 40 animal species has been noted, of which 19 species are endangered species in Europe and in Serbia.

*Cave of Cerje (Cerjanska pecina)* – a natural monument protected by the Decree on Protection of Natural Monument (Official Gazette of the Republic of Serbia No. 5/98), is located in the area of the Niš municipality, on cadastre municipalities Cerje and Kravlje, with a total area of 63,96,89 ha of which 60,44,56 ha are privately owned, and 3,52,33 ha are in public ownership.

*Kamenica Heights (Kamenički Vis)* – the woodland park on Kamenički Heights is protected by the Decree on Declaration of Woodland in Public Ownership as Special Purpose Woodlands, Municipality Assembly of Niš, 01-267/90-II -4, 19.09.1990.

On part of the territory of the City of Niš is the Special Nature Reserve *Suva Planina* placed under protection by the decision on Preliminary Protection of Special Nature Reserve „Suva Planina“ (Official Bulletin of the Republic of Serbia No. 65/2008). The total area of the special reserve is 18,176,26 ha and 91 m<sup>2</sup>.

Localities of greater biodiversical significance are: Lalinačka Slatina, Miljkovac Gorge and Srečko's Gorge.

*Lalinac Salt Marsh (Lalinačka Slatina)* is located near the village Mali Lalinac (Lalinačke Pojate), on the left bank of the South Morava river. It is one of the rare and best preserved salt marsh ecosystems in the area of Southern Serbia, which has been jeopardized in a larger measure in recent years because of the application of aggressive melioration measures. The significance of this salt marsh lies primarily in the presence of very rare plant species, one of the most important of which is the species *Stachys milanii*, which has been noted in this salt marsh and described as new to science, and today represents one of the most endangered species of flora of Serbia. In addition to this species, a number of highly endangered plant species can be found in Lalinac Salt Marsh and its immediate vicinity: *Camphorosma monspeliaca*, *Allium gutatum ssp. dalmaticum*, *Aster oleifolius*, *Statice gmelini* and *Nonea pallens*. In addition, a number of species has been found in Lalinac Salt Marsh: aster (*Aster canus* Njaldst. & Kit.), bristly oxtongue (*Picris echioides* L.), sand leek (*Allium scorodoprasum* L. ssp. *njaldsteinii* (G. Don) Stearn) and pannonian salt marsh plant species *Acorellus pannonicus* (Jaclj.) Palla. There are also significant ecosystems, such as ecosystems whose phytocenotic components are the associations *Hordeo-Puccineliatum distantis*, *Camphorosmetum monspeliacae*, *Bolboschoenetum maritimi*, *Acorelletum panonici* and others. The ecosystem with the association dominated by *Stachys milanii* is of special significance.

*Miljkovac Gorge* was created by the force of the Toponica River, which, cutting its way through the Calafat Massive, created an impressive gorge, characterized by a large variety of relief forms. The plant life of the gorge is somewhat poorer than that of the aforementioned gorges, but this may be the result of insufficient research of this area. Many endemic plant varieties have been found in the gorge, the most significant being the serbian ramondia (*Ramondia serbica* Pančić), *Ranunculus serbicus* Vis., *Tragopogon balcanicus* Vel. and *Erysimum comatum* Pančić. The finding of sage (*Salvia officinalis* L.) is especially interesting, since, besides the Sićevac Gorge, this is the only finding of this species in continental parts of the Balkan peninsula. The possibility that it is adventive here, i.e. that it has been introduced from the Sićevac Gorge, does not lessen its significance, as it forms very rich populations, and appears in its natural association *Artemisio-Salvietum officinalis*. In the Miljkovac Gorge, relict woodlands with Turkish hazel (*Corylus colurna* L.) are also well developed, as are shrublands with lilac (*Syringa vulgaris* L.). Habitats without forest cover include plants characteristic of steppe habitats.

*Srečko's Gorge* is a short canyon above the Kamenica village. This canyon with its peripheral parts constitutes a very interesting locality in a biodiversical sense. The locality is especially significant because of numerous endemic species: *Tragopogon balcanicus*, *Erysimum comatum*, *Crocus adami* Gay, *Campanula velebitica* Borb. and others. This gorge is the only known habitat of the Rumelian hyacinth (*Hyacinthella leucophaea* (Stev.) Schur. var. *rumelica* (Vel. Hayek) in Serbia. Of large significance are also the golden crocus (*Crocus chrysanthus* Gay) and hybrid crocus (*C. hybridus*

Petrović), species widespread in the periphery of the gorge and on the pastures above Brenica and towards Kamenica Heights. In the gorge area, the very rare bird species long-legged buzzard (*Buteo rufinus Cretz.*), which nests in inaccessible areas, has been spotted. In addition to its biodiversical significance, this locality has a geomorphological and geological significance.

For the purpose of protection, preservation and improvement of the most significant ecosystems, i.e. environments with the most pronounced biodiversical and other significance, some parts of the territory of the Niš municipality should be proposed for protection.

### 3.4.3. Endangered plant species

A large number of plant species in the vicinity of Niš were recorded as belonging to one of the categories of endangerment. Most interesting are the plant species in the probably extinct (EX) and critically endangered (CR) categories, i.e. the plants included in the book "Red Data Book of Flora of Serbia, I" (Stevanović, ed. 1999).

The category of *probably extinct plant species* includes: Venus Looking Glass (*Legousia falcata (Ten.) Fricsh et Janchen, fam. Campanulaceae*) was once found in the rocky areas around Niš; Yellow Ophrys (*Ophrys lutea Cav. ssp. minor (Tod.) O. & E. Danesch, fam. Orchidaceae*) was once found in the immediate vicinity of Niš. This plant was found in the Mediterranean; Spitzel's Orchid (*Orchis spitzelii Sauter ex Nj. Koch, fam. Orchidaceae*) inhabited the forest ecosystems in the immediate vicinity of Niš and Niška Banja; Nut grass (*Cyperus rotundus L., fam. Cyperaceae*) inhabited the sandy banks of the South Morava River near the village of Vrtište. This species is of cosmopolitan distribution; *Genista nissana Petrović, fam. Fabaceae* was found and described from the Gorica hill, the northern slopes of the Seličevica Mountain.

The category of *probably extinct plant species* from around Niš includes: Annual Fimbry (*Fimbristylis bisumbellata (Forskål) Bubani, Cyperaceae*) which inhabited the sandy banks of the Nišava River in the part of the flow which today flows through the City; Greater Spearwort (*Ranunculus lingua L., fam. Ranunculaceae*) which inhabited the pools around Niš.

The category of *critically endangered plant species*, or species that can in our country be found only in the vicinity of Niš, includes: Milan's Woundwort (*Stachys milani Petr., fam. Lamiaceae*) was found in Lalinačka Slatina, which is probably the only location in the habitat of this species; Cyrill's Garlic (*Allium cyrilli Ten., fam. Alliaceae*) was found in several locations in the City of Niš itself (Duvanište, Gorica, St. Panteleimon, Vrežina, Brzi Brod, Gornji Komren, Vinik); *Camphorosma monspeliaca L., fam. Chenopodiaceae* is known from Laličanka Slatina; *Hypocoum pseudograndiflorum Petrović, fam. Papaveraceae* is a Balkans-Anatolian species, which in our country is known from only a few locations in and around Niš (Fortress, Čair, by the Nišava behind Jagodin Mala, Medoševac); *Nonea pallens Petrović, fam. Boraginaceae* is endemic, known only from several locations around Niš (Lalinačka Slatina, Gorica, Mezgraja); Dalmatian Garlic (*Allium guttatum Steven ssp. dalmaticum (A. Kern. ex Janch.) Stearn, fam. Alliaceae*) is a Mediterranean plant which in Serbia is known only from the immediate vicinity of Niš (Lalinačka Slatina) and *Aster oleifolius (Lam.) Njagenitz, fam. Asteraceae* which grows in the hills formed from Pliocene sediments above Mramor (the Mramor Plateau) and Mali Lalinac, and Lalilačka Slatina.

### 3.4.4. Protected plant species – trees under strict protection

Within the area covered by the Spatial Plan, in the territory of the Nišava district the following Natural Monuments – trees under strict protection can be found: "Ajka's Elm", CM Gornji Matejevac, "Turkey Oak Zapis", on cadastral lot No 1393, CM Leskovic, "Turkey Oak Zapis", cadastral lot No 1386/2, in CM Leskovic, "White Mullberry" cadastral lot No 1119/1, CM Niška Banja, "English Oak" cadastral lot No 1174, CM Donja Trnava, "English Oak – Pavločić's Oak" cadastral lot No 2691/2

and 2691/3, CM Donja Trnava, "English Oak - Rajković's Oak" cadastral lot No 1253/3, in CM Donja Trnava, "Sessile Oak - Zapis" cadastral lot No 2593, near Banjica Lake, CM Pasjača, "Elm Zapis" cadastral lot No 511, CM Novo Selo, "Black Mullberry - Zapis" cadastral lot No 2076, CM Medoševac.

#### **3.4.5. Endangered animal species**

It is hard to assess the situation regarding endangerment of the animal species since there is no appropriate written data available.

#### **3.4.6. Protected animal species**

It is hard to assess the situation regarding protected animal species since there is no appropriate written data available.

### **3.5. WASTE**

#### **3.5.1. Quantity of waste per household**

The quantity of waste produced in the households of the City of Niš is 0.9 kg/per inhabitant on average.

#### **3.5.2. Quantity of communal waste with organized collection**

The City of Niš has organized the collection of communal waste throughout its territory through the public utilities company JKP "Medijana". The collective housing zones are equipped with 1 m<sup>3</sup> dumpsters which the population living in apartment buildings use to dispose of their communal waste. Separation by recyclability is not carried out as a rule; all garbage is disposed of together.

Inhabitants of individual housing units all collect their garbage in their own bins until it is collected by the public utilities company. Collection of garbage is conducted according to a prearranged plan, generally once a week. An average of 180 to 210 tons of waste is collected per day. During the summer months larger daily quantities of waste are collected.

#### **3.5.3. Presence of biohazardous waste**

There is no reliable data on biohazardous waste that is disposed of together with communal waste, since waste separation is not carried out at the source. Hazardous waste (biological, medical) makes up around 2-4 % of the overall quantity of collected waste.

#### **3.5.4. State of dumps**

The communal waste dump is located in the south-western part of Niš, on the western slopes of Bujanj, around 100 meters from the Niš – Malošište road. By this road the dump is located 5200 meters from the urban core, or around 4000 in a straight line.

According to the Detailed Urban Plan the entire complex takes up 310,787 m<sup>2</sup>, 232,552 m<sup>2</sup> of which is in the territory of the Niš Municipality, and 78,235 m<sup>2</sup> in the territory of the Doljevac Municipality. Waste disposal in this dump began in 1968.

Around 6,000,000 m<sup>3</sup> of waste has been disposed of in this dump so far. After waste disposal and filling the layers, the layers are then closed by spreading humus.

The dump complex is fenced in and is under constant surveillance of security officers. It is located in the valleys of periodic watercourses that flow in the east-west direction, and join into a single watercourse in the area of the dump, which then spreads out towards the valley of the South Morava River. The most part of the dump is located on clays, loams and marly clays in the category of semi-coherent compact rocks. The north-eastern part is located on incoherent rock – gravels of lacustrine type.

.Considering the composition of the earth and the presence of sandy and gravelly sediments, the appearance of gravitational water can be expected on the entire terrain.

Due to uncontrolled disposal and non-observance of the basic principles of communal waste disposal, the ecological balance in the broader area of the current dump has been disturbed, primarily in the form of: destruction of agricultural land at the rims of the complex, pollution (to the point of destruction) of the surface waters, pollution of ground waters, since no monitored drainage and purification of drainage water is carried out, air pollution spreads 5-10 meters downwind, and the potential danger of methane explosions is growing (no degassing is carried out).

The current location of the dump has its downsides, since it is located at the rim of an inhabited area, lies right next to the cemetery, near the burial zone, and is in the direction of the prevailing winds towards some of the settlements.

The positive sides of the dump are: good traffic connection with the areas it serves, the possibility of connection to the infrastructure network, the agricultural land is of the 4<sup>th</sup> – 6<sup>th</sup> category, so the use for communal purposes is considered rational, and there are no settlements in the direct path of drainage waters.

### ***Illegal dumps***

According to the cadastre dating from March 2009, 106 illegal dumps were registered in the territory of the City of Niš. Since then rehabilitation of 51 of the illegal dumps has been carried out, while the rehabilitation of a further 17 illegal dumps is ongoing. It is possible that some of the dumps, because of the long-term habits of the population, have been reestablished.

The number of illegal dumps by municipalities in the territory of the City of Niš is as follows: Medijana urban municipality: 11; Pantelej urban municipality: 30 (urban area: 9, rural area: 21); Crveni Krst urban municipality: 25 (urban area: 22, rural area: 3); Palilula urban municipality: 35 (urban area: 22, rural area: 13); Niška Banja urban municipality: 8.

### **3.5.5. Volume of recycled waste**

The City of Niš does not have a recycling center. The public utilities companies have only organized collection of PET bottles. The average monthly quantity collected is around 250 kg. There is no organized collection of other recyclable materials (paper, glass and metal). Paper and metal is collected by individuals, either from communal dumpsters or in front of catering facilities, public facilities, construction sites etc., and then turned over to organizations that distribute secondary raw material.

## 4. SAFETY IN EMERGENCY SITUATIONS

### INTRODUCTION

An emergency situation is a situation in which the risks and threats or effects of disasters, emergency situations and other events hazardous to the population, the environment and property are of such volume and intensity that their onset or effects cannot be prevented or remedied through regular actions of the competent authorities and resources, so mitigation and recovery requires special measures, forces and means and an enhanced mode of operation<sup>35</sup>. The causes of emergency situations can be technical and technological accidents and disasters, natural disasters, anthropogenic (cumulative) factors, wars, acts of terrorism and other major accidents.

SUB-FIELD	INDICATORS
<b>TECHNICAL AND TECHNOLOGICAL EMERGENCY SITUATIONS</b>	Accidents in the transportation of hazardous substances Accidents in industrial systems and communal supply systems Fires and explosions Forest fires Percentage of the population exposed to the effects of technical and technological accidents Number of technical and technological emergency situations Individual and social risks
<b>NATURAL EMERGENCY SITUATIONS</b>	Earthquakes Floods Landslides Weather disasters Epidemics Number of declared natural disasters Individual and social risk
<b>ANTHROPOGENIC EMERGENCY SITUATIONS</b>	Use of renewable energy sources Production use of substances that damage the ozone layer Mean annual air temperature
<b>WAR AND ACTS OF TERRORISM</b>	Bombed structures Number of fatalities Number of located and destroyed unexploded ordnance Number of acts of terrorism
<b>LOCAL SELF-GOVERNMENT</b>	Protection and rescue teams Protection and rescue system capacity Education and training Protection and rescue documents

Safety in emergency situations is the state of protection of the population, national industrial facilities and the environment from hazards caused by emergency situations. Ensuring safety in emergency situations is possible only if an integrated protection and rescue system is in place (a system for managing and organizing the participants in the protection and rescue system in implementing preventive and operational measures, performing tasks relating to protection and rescue of persons and property from natural disasters and other accidents, including recovery measures).

<sup>35)</sup> Law on Emergencies, "Official Gazette of RS", No 111/09

The adoption of the new Law on Emergency Situations has laid the foundation for putting an integrated protection and rescue system in place in the Republic of Serbia. This will enable the pooling of all the available capacities and resources on the level of the City of Niš and their efficient deployment in an organized response to all forms of emergency situations. This will solve the basic problem encountered in practice today – lack of coordination in emergency management due to the competence being divided between various ministries and governmental bodies, which naturally reflects on the local self-government as well.

An analysis of safety in emergency situations was conducted within the following sub-fields: technical and technological emergency situations, natural emergency situations (emergency situations caused by natural disasters), anthropogenic emergency situations (emergency situations caused by the accumulated effects of human activities), war and acts of terrorism, and the local self-government. Certain indicators were established for each of the sub-fields to enable the evaluation of the safety situation in emergency situations in the City of Niš.

#### **4.1. TECHNICAL AND TECHNOLOGICAL EMERGENCY SITUATIONS**

Technical and technological emergency situations include technical and technological accidents and disasters (accidents in transport, accidents and breakdowns in industrial, electric energy and municipal systems, fires, explosions, accidents in handling nuclear and radioactive substances, etc.) of a volume and intensity that requires the use of special measures, forces and resources.

Accidents in transport and disasters in industrial facilities are primarily taken to mean events in which hazardous substances are present.

##### **4.1.1. Accidents in the transport of hazardous substances**

Niš is located at the intersection of Balkan and European roads.

The main transport corridors for hazardous substances in road and railway transport passing through Niš are: Belgrade-Niš-Skopje, Niš-Sofia-Istanbul, Niš-Zaječar-Negotin and Nip-Prokuplje-Priština.

Characteristic of these corridors is that they pass through basins, directly alongside riverbeds, frequently through the central parts of urban areas, and past water intake systems for supplying settlements with water as well.

Table 1 shows the data on transport of hazardous substances in road transport in the period 2005-2007. The most frequent substances conveyed in road and railway transport in the territory of the City of Niš are: acetylene, acetone, ammonia, ammonium nitrate, nitric acid, benzol, petrol, butane, butanol, and hydrogen cyanide<sup>36</sup>.

18 accidents with hazardous substances took place in transport and in stationary installations in the territory of the City from 1999 to 2008. None of these accidents were of the nature of an emergency.

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<sup>36)</sup> LEAP for Niš



**Table 1.** Transport of hazardous substances in road transport (in tons), 2005-2007<sup>37</sup>

	Total	Explosives	Gases	Flammable fluids	Flammable solids	Auto-inflammable substances	Oxidizing substances	organic peroxides	Poisonous substances	Various hazardous substances
2005	78112	4	1102	20671	50250			5350		735
2006	110186	30	14801	90081	32	1000	1200		812	2230
2007	76706		21847	48337		800		1100		4622

#### 4.1.2. Accident in industrial systems and communal supply systems

Commercial companies and other legal entities conducting activities in which one or more hazardous substances is or can be present in quantities equal to or exceeding regulation quantities (SEVESO plant operators) are obligated to provide a Notice, or prepare an Accident Prevention Policy or a Safety Report and Accident Protection Plan, depending on the quantity of hazardous substances involved in the conducting of such activities, and to implement the chemical accident prevention measures and measures for restricting the impact of such accident on human life and health and on the environment specified in such documents. There are four companies – SEVESO plant operators in the territory of the City; Table 2.

**Table 2.** Extract from the Preliminary List of plants subject to obligations under the Seveso II Directive<sup>38</sup>

No.	COMPANY NAME	CORE ACTIVITY	MUNICIPALITY
1.	BAR Prom d.o.o. TNG storage plant	TNG trade	Medijana
2.	Messer Tehnogas – Niš factory	Production of technological gases	Palilula
3.	NIS a.d. Branch Office NIS Petrol, Niš Installation	Trade of crude oil and crude oil derivatives	Crveni Krst
4.	NIS TNG, Niš Regional Center	Wholesale of fuels	Crveni Krst

These companies all have accident protection plans and implement the necessary measures for prevention and restriction of chemical accident impact. In the previous ten-year period there have been no accidents characterized as emergency situations in these companies.

There have been no breakdowns in the communal supply systems (electric power distribution, water supply, gas pipelines) with longer consumer-supply interruptions that would be considered emergency situations.

<sup>37)</sup> Serbian Statistical Yearbook 2007, Buletin – Traffic, storage, links, 2007

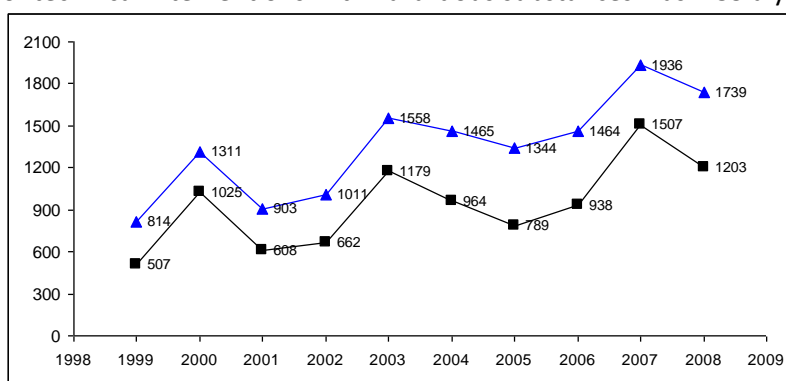
<sup>38)</sup> Ministry of the Environment and Spatial Planning

### 4.1.3. Fires and explosions

The City provides organization and implementation of fire prevention measures and other measures towards the upgrading of fire prevention. Rendering a decision on adopting the Fire Prevention Plan is within the competence of the City Assembly.

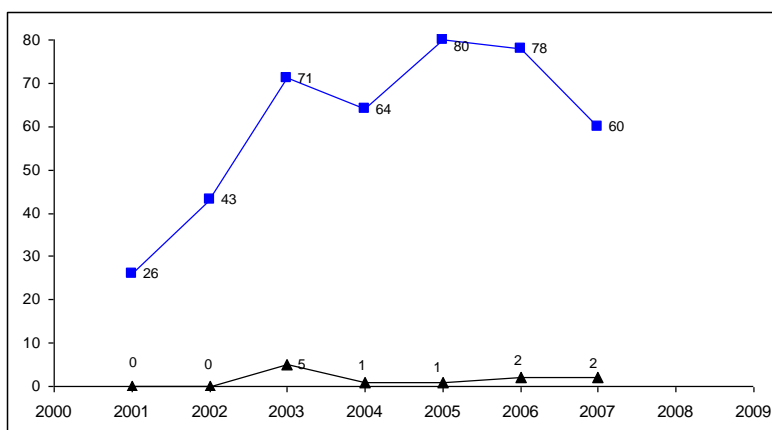
The Department for Emergency Situations in Niš keeps statistical data on the overall number of interventions, the types of incidents, the types of technical and other interventions, duration of each intervention by stages, average deployment of responders, and the number of casualties and fatalities. Some of the statistics of the Department for Emergency Situations in Niš are shown in figures 1 and 2.

Around 68% of all interventions in the period from 1999 to 2008 were in cases of fire and explosions (from 58.70% in 2005 to 78.18% in 2000). There were up to 2 explosions per year. The average number of technical interventions with hazardous substances was 1.59 a year.



**Figure 1.** Overall number of interventions and number of fire and explosion interventions of the Department for Emergency Situations in Niš<sup>39</sup>

<sup>39)</sup> Department for Emergency Situations in Niš



**Figure 2.** Number of interventions with hazardous substances in the Republic of Serbia<sup>40</sup> and the Department for Emergency Situations in Niš

In the period from 1999 to 2008 there were no casualties among the Department's forces, but there were 438 civilian casualties (52 in fires and explosions, or 11.87%).

#### 4.1.4. Forest fires

The "Niš" Forest Estate manages forest land with an overall area of 56,123 ha, consisting of state-owned forests, forest land and other land. It is made up of three forest administrations (Niš-Bela Palanka, Aleksinac and Sokobanja), and spreads across the following 12 municipalities: Aleksinac, urban municipality Niš-Crveni Krst, Niš-Pantelej, Niš-Palilula, Niška Banja, Cvrlijig, Gadžin Han, Doljevac, Bela Palanka and Sokobanja, and a minor part of the municipalities of Leskovac and Merošina. Most of the forest land administratively belongs to the Nišava administrative district (32,676 ha). Private forests administratively belonging to the area in which the "Niš" Forest Estate operates occupy an area of 55,362 ha, and the segment relating to the Nišava administrative district occupies an area of 36,877 ha.

**Table 3.** Data on fires in the territory of the Nišava administrative district in the period 2000-2009 (state-owned forests)

YEAR	AREA	NUMBER OF FIRES	AREA CAUGHT BY FIRE (ha)			CAUSE
			Forests	Artificial stands and cultures	Scrub forests, brushes, clearings	
2000	Niš. adm. dist.	11	82.00	35.31	213.85	Human factor
	Niš-Niš. Banja	1	82.00		25.00	Human factor
2002	Niš. adm. dist.	1	1.50			Human factor
	Niš-Niš. Banja					
2003	Niš. adm. dist.	8	62.71	39.00	31.06	Human factor
	Niš-Niš. Banja	1			1.06	Human factor
2005	Niš. adm. dist.	1	7.50			Human factor
	Niš-Niš. Banja					
2006	Niš. adm. dist.	1	0.50			Human factor
	Niš-Niš. Banja					Human factor
2007	Niš. adm. dist.	41	403.21	2.60	850.74	Human factor

<sup>40</sup> Ministry of Internal Affairs – Ministry Statistics

	Niš-Niš. Banja	2			2.50	Human factor
2008	Niš. adm. dist.	3	0.20	0.25	1.10	Human factor
	Niš-Niš. Banja					Human factor
2009	Niš. adm. dist.	4	1.20	0.04		Human factor
	Niš-Niš. Banja					Human factor
<b>Total</b>	<b>Niš. adm. dist.</b>	<b>70</b>	<b>558.82</b>	<b>89.08</b>	<b>1096.75</b>	
	<b>Niš-Niš. Banja</b>	<b>4</b>	<b>82.00</b>		<b>28.56</b>	

The Estate has operational forest-fire risk maps for the area it manages, and a Forest Fire Prevention Plan. These documents are forwarded to all firefighting and rescue teams in the area. Tables 3 and 4<sup>41</sup> show data relating to the forest fires in the period 2000-2009 for the territory of the Nišava administrative district in the fighting of which the employees of “Niš” Forest Estate took part.

During the observed period 130 fires broke out in the territory of the Nišava administrative district (70 on state-owned and 60 on private land), and 12 in territory of Niš-Niška Banja (4 on state-owned and 8 on private land).

The largest number of fires broke out in 2007, 41 in state-owned forests and 34 in private forests. 403.21 ha of state-owned forests and 441.62 ha of private forests were caught by fire. The same year there were 6 fires in the territory of Niš-Niška Banja, on 20.5 ha of land (scrub forests, bushes, clearings). All of the fires were caused by the human factor.

**Table 4.** Data on fires in the territory of the Nišava administrative district in the period 2000-2009 (private forests)

YEAR	AREA	NUMBER OF FIRES	AREA CAUGHT BY FIRE (ha)			CAUSE
			Forests	Artificial stands and cultures	Scrub forests, bushes, clearings	
2000	Niš. adm. dist.	5	29.14	0.10	50.00	Human factor
	Niš-Niš. Banja					
2002	Niš. adm. dist.	4	10.00	2.70	100.00	Human factor
	Niš-Niš. Banja					
2003	Niš. adm. dist.	3		75.00	5.00	Human factor
	Niš-Niš. Banja				5.00	Human factor
2006	Niš. adm. dist.	2	2.50			Human factor
	Niš-Niš. Banja	2	2.50			Human factor
2007	Niš. adm. dist.	34	441.62	1.10	1995.65	Human factor
	Niš-Niš. Banja	4			18.00	Human factor
2008	Niš. adm. dist.	4	5.00		25.75	Human factor
	Niš-Niš. Banja	1			0.20	Human factor
2008	Niš. adm. dist.	8	6.10	2.60	110.40	Human factor
	Niš-Niš. Banja	1	3.50	0.50	56.00	Human factor
<b>Total</b>	<b>Niš. adm. dist.</b>	<b>60</b>	<b>494.36</b>	<b>81.50</b>	<b>2311.80</b>	
	<b>Niš-Niš. Banja</b>	<b>8</b>	<b>6.00</b>	<b>0.50</b>	<b>79.20</b>	

<sup>41)</sup> Public Company “Srbijašume”, “Niš” Forest Estate

#### **4.1.5. Percentage of population exposed to the impacts of technical and technological accidents**

Considering the position of the railway and road transport corridors, the location of the airport and of SEVESO operators, in a pessimistic scenario regarding emergency situations (scenario presuming maximum loss) the entire population of the City could be considered at risk of exposure to technical and technological hazards.

#### **4.1.6. Number of technical and technological emergency situations**

Based on the analyses of transport of hazardous substances, accidents in industrial systems, breakdowns on municipal supply systems, fires, explosions and forest fires, it can be concluded that they were not of a volume or intensity requiring the use of special measures, forces and resources, namely they were not characterized as emergency situations.

#### **4.1.7. Individual and social risk**

Individual risk is the frequency with which a person can be expected to be exposed to harm, injury or death. Social risk constitutes the scope and severity of the negative impacts of emergency situations. It is assessed according to the dynamics of impact per 1000 persons. Since no technical and technological emergency situations were declared at the City level during the previous ten-year period, the individual and social risks of technical and technological emergency situations are acceptable.

## **4.2. NATURAL EMERGENCY SITUATIONS**

Natural emergency situations include earthquakes, floods, torrents, weather disasters, rock slides and landslides, extreme air temperatures, epidemics of contagious diseases, contagious livestock diseases and plant diseases and infestation with pests, and similar large-scale occurrences that could endanger human health and lives or cause large-scale damage<sup>42</sup>.

#### **4.2.1. Earthquakes**

The National Seismology Network (NSN) consists of 18 seismological stations and 11 measuring points containing only accelerographs, making a total of 29 measuring points. In 2009 the NSN achieved its planned optimum form. The configuration and density of the NSN at the end of 2008, with 27 measuring points, was above average for the countries of the Western Balkans.

In 2008 1034 earthquakes were registered in the territory of the Republic of Serbia, which is three times more than in 2007. The reason for this lies in the increased capacity and quality of the NSN. The seismic activities were moderate (the maximum earthquake magnitudes do not exceed 4.5

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<sup>42)</sup> Large-scale damage is damage which by value exceeds 10% of the national income in the territory of the municipality for the previous year (Law on Emergency Situations)

degrees on the Richter scale) with an increased number of smaller earthquakes and activation of a larger number of known epicenters.

The Niš region does not lie in an area of increased seismic activity. The last large earthquake in this area was in 1980, and the epicenter of that earthquake was in the Kopaonik region (8 degrees on the Mercalli scale). Since an expected earthquake of maximum magnitude for the Kopaonik region was registered only 29 years ago, another earthquake of this magnitude is not expected, but smaller earthquakes with magnitude of up to 4.5 degrees on the Richter scale are a possibility<sup>43</sup>.

#### 4. 2.2. Floods

The measures and actions for flood defense in a certain region are identified by a general and operational flood defense plan<sup>44</sup>. General and operational plans are prepared for watercourses that contain structures for protection from damage caused by water. Measures and actions for flood defense for regions that are not included in these plans but could be at risk of flood are prepared by the municipal assembly.

The "Morava" water area outside the territory of the City of Belgrade is within the competence of Public Waterworks Company "Srbijavode". It includes 22 sectors. The region covered by "Srbijavode" has: 1,894 km of embankments; 34 reservoirs, around 576km of regulated watercourses and a large number of regulating structures-bank revetments; a large number of torrent partitions, cascades, quickflows etc. Said structures protect around 600,000 hectares of land under cities, settlement, industrial facilities and various infrastructures.<sup>45</sup>

The "Niš" sector includes the South Morava River from its joining (Stalać) to the mouth of the Nišava River with tributaries and the Nišava River (total length of 147.02 km), as well as the Bovan dam (on the Moravica), the Zavoj dam (on the Visočica) and the Krajkovac dam (on the Krajkovac River). The operational plan of defense against flooding by external waters for 2009 for the territory of the City of Niš plans for the construction of 40.20km of embankments ( 31.02km along the Nišava, 5.86km along the Toponica River and 3.32km along the Gabrovac River).

The criteria for implementation of measures for defense against floods by external waters are water levels and above mean sea levels of the rivers at the hydrological stations of the Serbian Hydro-Meteorological Office. There is one hydrological station in the territory of the City of Niš for regular and emergency monitoring of the water level of the Nišava (Niš) and one hydrological station for emergency monitoring of the water level of the Toponica River (Gornja Toponica). Emergency monitoring of the water level on the Toponica River begins when the conditional water level of the Nišava is reached.

The criteria and conditions for declaring regular and emergency flood defense from internal waters are defined by the flood defense operational plan. The Operational plan for defense against flooding by internal waters for 2009 in the Niš sector has not planned for any works to be carried out.

The criteria for regular defense against ice floods differ from river to river. For the rivers in the territory of the City of Niš and the Nišava administrative district regular defense is declared at 100% coverage of the water surface and ice thickness of more than 5cm in the periods where ice movement is expected. Emergency defense is declared when the movement and piling of ice begins after the static ice cover.

Monitoring ice occurrence is conducted by the Republic Hydro-Meteorological Service of Serbia (Nišava: Niš) and the public company Srbijavode (Ljubeška Skela and Mramorski Most).

<sup>43)</sup> Serbian Seismology Institute

<sup>44)</sup> The General Flood Defense Plan is prepared by the Government for a five-year period. The Operational Flood Defense Plan is prepared by the ministry in charge of water management for a one-year period.

<sup>45)</sup> Public Company "Srbijavode" Belgrade – Operational plan for 2008

Maintenance and reconstruction of the water management structures is a preventive measure for providing the necessary conditions for the flow of large volumes of water in the interest of defense against floods and ice. However, investing in the investment maintenance and retrofitting of the flood defense systems is still insufficient.

A particular problem is posed by erosion areas and torrents. The torrents cause degradation of the erosive surfaces, movement of the sediments and clogging of the riverbeds and accumulations, endangerment of the settlements and traffic infrastructure. Therefore it is necessary to regulate the torrents and decrease erosion. The full protective effects are achieved through the optimal combination of biological, biotechnical and construction-torrential works in the riverbed.

Regulation of the torrential flow beds in the territory of the City has not yet been conducted. Heavy precipitation brings about the overflowing of the Kutina, Gabrocac and Toponca Rivers, as well as the Suvodol, Humski and Rujiški Springs.

#### **4.2.3. Landslides**

Rockslides and landslides affect around 25% of the territory of the Republic of Serbia. In April 2006 heavy floods and long-term uncontrolled felling of forests caused landslides in the territory of several Serbian municipalities. The damage caused by the landslides in 2006 was estimated at 25 million euros<sup>46</sup>.

There are 14 landslides in the territory of the City of Niš. Heavy precipitation frequently activates the landslide on Mramor Hill. The landslide on Mramor Hill endangered around one hundred houses in 2008. The landslide also damaged around 70 meters of the regional road Niš-Prokuplje when excavations for laying the waterworks and sewage installations began.

#### **4.2.4. Weather disasters**

##### ***Hail***

The anti-hail protection system consists of a network of 16 radar centers. Hail defense is conducted from April 15<sup>th</sup> to October 15<sup>th</sup>.

The "Niš" radar center is located at Kamenica Heights. It provides defense for the territory of the Knjaževac, Sokobanja, Žitorađa, Gadžin han, Doljevac, Merošina, Niš, Svrlijig, Babušnica, Bela Palanka, Dimitrovgrad and Pirot municipalities. The overall defended area is 643500 hectares, 383126 hectares of which are agricultural land. 111 of the planned 126 hail-defense stations have been activated.

The second half of May and all of June 2007 was a period of extremely unstable weather with frequent hail-bearing clouds, when seeding potential hail-bearing clouds was conducted for 35 days, 14 days above the multi-annual average, which is currently a climatological maximum. Between April 15<sup>th</sup> 2007 and July 15<sup>th</sup> 2007 there were ten days with damage.<sup>47</sup> A total of 2,752 hectares suffered damage, and the percentage of damage ranged from 0 – 100%, which is 0.72% of the overall defended agricultural area. 337 hectares suffered damage in the Niš municipality, and the percentage of damage ranged from 10 – 40%. The greatest damage in the Niš municipality was recorded on May 24<sup>th</sup> 2007, when 217 hectares suffered damage, with the percentage of damage ranging from 10 – 40%.

<sup>46)</sup> National sustainable development strategy

<sup>47)</sup> RHMS of Serbia, Report on the functioning of the hail defense system in the territory of the Niš Radar Center for the period 15.4.2007. to 15.7.2007.

### **Drought**

According to the data registered by the national weather station network, a trend of temperature increase in the second half of the 20<sup>th</sup> century was observed in most of the territory of the Republic of Serbia. The trend for precipitations shows local differences. The largest decrease of precipitations (around 120 mm annually) in the territory of Serbia in the period 1950-2005 was recorded in the Negotin Krajina. An increase of annual precipitation volume was mostly recorded in the mountainous region of Western Serbia and in the southern parts of Kosovo and Metohia. A further decrease of precipitations is expected, together with a decrease in the number of days with snow and snow cover, decrease of drainage, soil moisture and availability of water resources.

The frequency, intensity and duration of meteorological droughts has increased in Serbia due to increased air temperatures, decreased summer precipitation and longer dry spells. This trend will continue, especially in Southeastern and Eastern Serbia. Drought was especially observed in the year 2007. The long dry spell began in mid-June and lasted through to August. The precipitation deficit in some areas of South and East Serbia rose to 95% in July. The estimated damages to agricultural production in the Nišava region were as high as 90%<sup>48</sup>.

#### **4.2.5. Epidemics of contagious diseases**

The epidemiological situation in the Nišava and Toplica regions is analyzed by the Public Health Institute in Niš. According to the data collected by this institute, the most frequent epidemics in this area are epidemics of infectious intestinal diseases.

In 2007 there were 31 epidemics registered in the Nišava and Toplica regions, affecting 490 persons. Most of the epidemics were epidemics of infectious intestinal diseases (28) affecting 440 persons, two were epidemics of respiratory diseases affecting 35 persons and one was in the category of other contagious diseases, affecting 15 persons. In the category of infectious intestinal diseases there were 19 epidemics of *hepatitis virosa ac. A*. In the Niš municipality 15 epidemics (3 collective, 12 family epidemics) affected 798 persons, 194 of which were hospitalized. The hepatitis A epidemic that broke out in the territory of the City of Niš in August 2007 was called off in July 2008, during which period a total number of 1317 patients was registered<sup>49</sup>.

In 2009 epidemics were reported in schools in Niš, based on the registered increase of flu-like illnesses and the confirmed pandemic strain of the flu virus. Epidemics were reported in other Serbian towns and regions as well, and at the proposal of the Serbian Public Health Institute the Minister of Health declared the pandemic flu epidemic an epidemic with increased epidemiological significance on November 11<sup>th</sup> 2009. According to the data of the National reference laboratory for respiratory viruses of the "Torlak" Institute of Immunology and Virology on March 26<sup>th</sup> 2010 705 confirmed cases of flu caused by the new virus A(H1N1) were registered in Serbia, 83 of which had a fatal outcome.<sup>50</sup>

The Clinic for Infectious Diseases treated 2842 patients suffering from flue caused by the A(H1N1) virus, 1434 suspected cases were recorded, 227 persons were admitted for treatment and

<sup>48)</sup> Environmental Protection Agency – Report on the state of the environment in the Republic of Serbia for 2007

<sup>49)</sup> Annual report on contagious diseases in 2007 in the Nišava and Toplica regions, Public Health Institute in Niš

<sup>50)</sup> Serbian Public Health Institute "Dr. Milan Jovanović Batut" Environmental Protection Agency – Report on the state of the environment in the Republic of Serbia for 2007



17 cases had a fatal outcome. The most frequent risk factors identified in the deceased patients were diabetes, cardiovascular illness, obeseness and chronic lung disease.

#### **4.2.6. Number of declared natural emergency situations**

Natural emergency situations in the territory of the City were caused by floods, precipitation (clouding of water supply sources), the onset of landslides and epidemics of contagious diseases, as follows:

- 2006 – Emergency flood defense (Urban municipality Crveni Krst)
- 2007 – Regular flood defense (Nišava River)
- 2007 – Water supply emergency (clouding of water supply sources)
- 2007 – Hepatitis A epidemic.
- 2007 – Rabies epidemic (stray dogs and cats)
- 2008 – Landslides on the Mramor Hill
- 2009 – Flu epidemic caused by A(H1N1) virus
- 2009 – Rabies epidemic (stray dogs and cats)
- 2010 – Emergency flood defense (Urban municipality Niška Banja)
- 2010 – Regular flood defense (Nišava, Topionica and Gabrovac Rivers)
- 2010 – Water supply emergency (clouding of water supply sources)

#### **4.2.7. Individual and social risk of natural emergency situations**

Considering the number of declared natural emergency situations in the territory of the City of Niš during the past ten-year period, and the number of persons at risk of damage, injury or death during these emergency situations, the individual and social risks of this type of emergency situations are unacceptable.

### **4.3. ANTHROPOGENIC EMERGENCY SITUATIONS**

Anthropogenic emergency situations are: the degradation of natural resources, climatic changes, temperature inversions, disappearance of plant and animal species, etc., caused by accumulation of the effects of human activities.

#### **4.3.1. Exploitation of renewable energy sources**

The energy resources in the Republic of Serbia are relatively poor and geographically unevenly distributed. Petroleum, gas and quality coal are imported, while electricity can still be generated with the use of local resources. The period 2002-2008 is characterized by increased consumption of overall primary energy, as well as the predominant use of fossil fuels (coal, petroleum, and gas). Uncontrolled degradation of non-renewable energy resources can lead to an “energy crisis”. For this reason it is necessary to turn towards the exploitation of renewable fuel sources before it is too late.

The only renewable source used in Serbia is its hydropotential, mainly for generating electricity. Serbia has the potential to generate half of its primary energy from renewable sources, but at the moment generates less than 6%. In contrast, the European Union has set for its member states the goal of generating around 12% of energy through exploitation of renewable sources by the end of 2010. The largest potential for renewable energy sources in Serbia is in its biomass (49%), followed by hydro-electric power stations (27%), solar energy (13%), geothermal sources and wind power (4% each) and small hydro-electric power stations (3%)<sup>51</sup>.

The City of Niš has the potential for renewable energy sources, primarily biomass, solar energy and geothermal sources, which are under-exploited. Although there are no precise data on the utilization of such energy sources, practice tells us that the percentage of exploitation of renewable energy sources is insignificant.

#### **4.3.2. Production and use of substances that damage the ozone layer**

Serbia, and therefore Niš as well, does not produce substances that damage the ozone layer, but does monitor the import and consumption of such substances. The Republic of Serbia observes the trend of import decrease, in accordance with the Montreal Protocol. This primarily refers to substances known as chlorofluorocarbons, which apart from damaging the ozone layer are also in the group of gases that cause the greenhouse effect, with a global warming potential 700-2300 times higher than carbon (IV) oxide.

#### **4.3.3. Annual air temperature trend**

The sudden increase of the concentration of greenhouse gases in the atmosphere observed during the past century was caused by human activity. This has disturbed the atmosphere energy balance and has initiated the global warming process. The concentration of five greenhouse gases (carbon(IV)oxide, nitrogen suboxide, tropospheric ozone, methane and chlorofluorocarbons) in the atmosphere is still found to be increasing. The human activities that contribute most to the increase of greenhouse gas concentration are power generation and consumption and traffic.

The trend of annual temperature increase began in 1981 and is still ongoing. According to the data for the period 1975-2004 the annual air temperature in Serbia has increased with an intensity of 4.54°C/100 years. The intensity of temperature increase in the period 1991-2008 is several times greater than in the period 1951-2008.

In most of Serbia year 2007 was warmer by 1.2 to 2°C. The broader area of Belgrade and the area of Smederevska Palanka, Niš and its surroundings and the Negotin Krajina were the warmest areas of the Republic in 2007. Considering the various predictions for our future climate, we could say that 2007 was one of the typical future years.

The annual air temperature trend for the area of Niš in the period 1951-2008 was 0.4-1 °C every 100 years, and in the period 1991-2008 as high as 6.5-7.5 °C every 100 years.<sup>52</sup>

<sup>51)</sup> Environmental Protection Agency – Report on the state of the environment in the Republic of Serbia for 2008

<sup>52)</sup> Environmental Protection Agency – Report on the state of the environment in the Republic of Serbia for 2008

## 4.4. WAR DEVASTATIONS AND TERRORISM

### 4.4.1. Bombed structures

From 24.3.1999 to 10.6.1999 the Republic of Serbia suffered NATO aggression. The bombed targets included vital structures of the industrial and traffic infrastructure. Niš was a frequent target of the NATO bombers. An extract from the Niš War Balance is given in table 5.

### 4.4.2. Number of fatalities

During the NATO aggression 55 citizens of Niš were killed: 25 civilians, 21 members of active and reserve armed forces and 10 members of the police force. Most of the civilians (15) died on May 7<sup>th</sup> 1999 in the bombing of Niš with cassette bombs.

### 4.4.3. Located and destroyed unexploded ordnance

In the territory of the City of Niš from 2006 to 2009 114 pieces of unexploded ordnance were located and destroyed, the majority being hand shells (47), followed by explosive devices (13), shells (9), aircraft bombs (5), cassette bombs (3), and a large number of artillery projectiles and grenades, artillery and firearm ammunition and bullets. Niš does not have a field for destruction of unexploded ordnance.

### 4.4.4. Terrorism

Terrorism poses one of the greatest risks and threats to global, regional and national safety. Modern terrorism is global by form, and is also linked to violent religious extremism. In global terrorism conditions the Republic of Serbia could be the target of acts of terrorism both directly, and through the exploitation of its territory to prepare and carry out acts of terrorism in other countries. From the viewpoint of safety risks and threats with which the Republic of Serbia is faced, the link between terrorism and all forms of organized trans-national and cross-border crime is of particular importance.<sup>53</sup>

**Table 5.** Niš War Balance – extract

No.	BOMBED STRUCTURES	PART OF LIST OF STRUCTURES ACCORDING TO EXTENT OF DESTRUCTION	NUMBER OF REQUESTS FOR ASSESSMENT OF DAMAGE	NOTE
1	Special purpose facilities	Military barracks "Stevan Sinđelić" Military airport Military barracks "Mija Stanimirović"		Bombed directly several times, with various types of projectiles
2	Industrial facilities	DIN - Niš Tobacco Industry Jugopetrol Energogas Elektrotehna MIN – Niš Mechanical Engineering Industry	250	Most damage was suffered by the industrial facilities in the so-called North-Western Industrial Zone of Niš

<sup>53)</sup> National Safety Strategy

3	Housing units and settlements	<p>“Šljaka” settlement  “Medoševac” settlement  “Ratko Jović” settlement  “Jagodin Mala-Pantelej” settlement  “Duvanište” settlement  “Čamurlija” settlement</p>	3.500	Settlements “Šljaka” and “Medoševac” were directly bombed by aircraft bombs, and the quarters in the vicinity of the market “Tvrdavska Pijaca” and the Pathology Clinic, as well as the “Duvanište” settlement by cassette bombs
4.	Infrastructure	<p>El. power system:  “Niš 2” power substation  Flyover on the Belgrade-Skopje highway  Bridge over the Nišava:  Trupale  Concrete bridge in Niš  Infrastructure in S. Paunovića Street  (waterworks, sewage system, hot water pipelines, postal infrastructure, installations, roads)</p>		The greatest direct and indirect damage to the City was definitely caused by the direct bombing of the power substation “Niš 2” in the “Nikola Tesla” settlement, by glass (graphite) and aircraft bombs, due to which the electric power system in most of the territory of the Republic of Serbia collapsed several times during the war.
5.	Social activity facilities	<p>- “Medoševac” elementary school  - “Nikola Tesla” boarding house for high-school students  - Complex of university technical faculties  - Technical school complex  - “12 February” museum-camp</p>	50	

#### 4.5. LOCAL SELF-GOVERNMENT

The local self-government units organize protection from natural and other disasters and fire prevention and ensure the necessary conditions for recovery or mitigation of the consequences thereof. In exercising their rights and fulfilling their obligations in the field of protection and rescue the local self-government units, through their competent bodies<sup>54</sup>:

1. enact a decision on organizing and operating of civil protection in their territory and ensure the implementation thereof in accordance with the integrated protection and rescue system;
2. enact a protection and rescue system development plan and program for their territory, in accordance with the Long-Term Protection and Rescue Development Plan of the Republic of Serbia;
3. plan and define the sources of Financing for the development, construction and execution of the safety and rescue tasks and civil protection development and the implementation of civil protection measures and tasks in their areas;

<sup>54)</sup> Law on Emergency Situations, “Official Gazette of RS”, No 111/09

4. form Emergency Headquarters;
5. cooperate directly with the competent authority, other governmental bodies, municipalities, commercial companies and other legal entities;
6. cooperate with the regions and municipalities of neighboring countries;
7. harmonize their protection and rescue plans with the Emergency Protection and rescue Plan of the Republic of Serbia;
8. define the critical facilities-commercial companies and other legal entities of particular importance for protection and rescue;
9. provide telecommunications and information support for the requirements of protection and rescue, as well as joining the telecommunications and information system of the Observation, Notification and Alert Service and connecting to it;
10. prepare and adopt a Threat Assessment and Emergency Protection and Rescue Plan for their areas;
11. monitor dangers, inform and provide early public warning in case of danger;
12. procure and maintain alarm devices within the integrated public alert system of the Republic of Serbia, take part in preparing the acoustics study for the territory of the municipality;
13. organize, develop and implement personal and mutual protection;
14. organize and equip general-purpose civil protection teams;
15. harmonize plans for protection and rescue in emergency situations with neighboring municipalities.

An emergency for a city is declared if there is immediate danger of it affecting, or if it is already affecting a part or the whole territory of the city, or if the city does not have the necessary capacity to respond in the emergency situation. The decision on declaring an emergency for the territory of a city is rendered by the mayor, at the proposal of the City Emergency Headquarters.<sup>55</sup>

#### **4.5.1. Protection and rescue forces**

##### ***Emergency headquarters***

For the purpose of coordination and handling of protection and rescue activities in emergency situations in the territory of the city, the City Assembly shall form City Emergency Headquarters, as the operational expert body for emergency management. The City Emergency Headquarters shall consist of a commander, deputy commander, chief and members of the headquarters. The commander of the headquarters shall be the mayor. The deputy commander shall be the deputy mayor or member of the city council. The chief of headquarters shall be the chief of the Department for Emergency Situations in Niš. The Chief, deputy and members of the emergency headquarters shall be appointed and removed by the City Assembly, at the proposal of the mayor. The City Emergency Headquarters shall, as needed, form additional expert operational teams for specific protection and rescue tasks.<sup>56</sup>

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<sup>55)</sup> Until the Law on Emergency Situations comes into force, the Decision on declaring emergencies in the territory of the City of Niš shall be rendered by the City Emergency Management Headquarters

<sup>56)</sup> Until the harmonization of the acts of the City Assembly with the provisions of the Law on Emergency Situations, the City Emergency Management Headquarters and the Operational Crisis Headquarters of the City of Niš shall be in charge of the tasks and with the organization as defined in the Decision on protection of people and property in emergency situations and forming of the City Emergency Management Headquarters.

### **Civil protection teams**

Civil protection teams are formed equipped and trained as operational forces for carrying out civil protection tasks as general-purpose teams and specialized teams. General-purpose teams are formed by local self-government units, commercial companies and other legal entities as temporary teams made up of volunteers and work-capable population, or employees, for the purpose of carrying out simpler protection and rescue tasks. Specialized teams are formed, equipped and trained for the purpose of carrying out complex civil protection tasks. Specialized teams are formed by commercial companies and other legal entities which, according to the Threat Assessment, are potential threats to the broader area. In the territory of the City specialized civil protection teams have been formed for rescue from ruins, care and evacuation, radiological, chemical and biological protection, protection from fires and explosions, first aid, rescue on and under water, mountain and cave rescues, identification and background security.

### **Firefighting and rescue teams**

Firefighting and rescue teams are operational forces of the Department for Emergency Situations in Niš for carrying out protection and rescue tasks. The Department for Emergency Situations in Niš covers the territories of Niš, Aleksinac, Svrljig and Doljevac, covering a total area of 597 km<sup>2</sup>. The firefighting and rescue teams have far fewer members than required, but their professional training and experience enables them to perform their duties efficiently. Other weaknesses that could be pointed out are: not all parts of the city have firefighting stations; lack of firefighting and rescue teams in Merošina, Gadžin Han and Ražanj; the equipment is outdated and lacks quality certificates, and the vehicles are outdated.

**Table 6.** Capacities of the Department for Emergency Situations in Niš

CAPACITIES (human resources)		GENDER		AGE				LEVEL OF EDUCATION			
		M	F	20-30	30-40	40-50	50-63	High school	College	University	Master
Current	Niš	94	3	16	50	29	2	77	10	9	1
	Aleksinac	15	0	3	5	6	1	14	1	0	0
	Svrljig	4	0	1	2	1	0	3	1	0	0
	Doljevac	7	0	4	3	0	0	7	0	0	0
	<b>TOTAL:</b>	120	3	24	60	36	3	101	12	9	1
Planned	Niš	110	6	35	50	29	2	84	12	18	2
	Aleksinac	17	0	5	5	6	1	16	1	0	0
	Svrljig	13	0	10	2	1	0	12	1	0	0
	Doljevac	13	0	10	3	0	0	12	1	0	0
	Gadžin Han	13	0	13	0	0	0	12	1	0	0
	Ražanj	13	0	13	0	0	0	12	1	0	0
<b>TOTAL:</b>	179	6	86	60	36	3	148	17	18	2	

**Table 7.** Capacities of the Department taken over from the Emergency Situation Office of the City of Niš

CAPACITIES (human resources)	GENDER		LEVEL OF EDUCATION		
	M	F	High school	College	University
Niš	20	4	6	3	15

**Table 8.** Special protection and rescue teams of the Department for Emergency Situations in Niš

Existing teams	On- and under-water flood protection and rescue team (36 members)
	Team for protection and rescue from ruins (22 members)
Planned teams	Team for rescue from depths and heights
	Technical interventions in traffic team
	Technical interventions with hazardous substances team
	Forest fire team

### ***Police and armed forces of the Republic of Serbia***

The police and armed forces of the Republic of Serbia are engaged in protection and rescue operations only if the available capacities of the City and the Republic of Serbia are insufficient for an appropriate response to an emergency situation.

**Table 9.** Capacities of the armed forces located in the garrison in Niš

One firefighting department located in the “Knjaz Mihailo” barracks, consisting of nine persons
One firefighting department located in the “Mija Stanimirović” barracks, consisting of nine persons

### ***Institutions whose regular activities are of interest for protection and rescue***

Institutions whose regular activities are of interest for protection and rescue are critical facilities. These are commercial companies and other legal entities with activities in the field of telecommunications, mining and energetics, railway transportation, weather forecasting, hydrology, seismology, protection from ionizing radiation and nuclear safety, environmental protection, waste management, forestry and agriculture, health, care and veterinary medicine.

**Table 10.** Healthcare capacities – medical staff in healthcare institutions on 31.12.2007

TOTAL	UNIVERSITY DEGREE				COLLEGE MEDICAL DEGREE	HIGH SCHOOL MEDICAL DEGREE	LOWER MEDICAL DEGREE
	Doctors	Dentists	Pharmacists	Assistants			
4933	1434	170	98	112	227	2819	23

**Table 11.** Capacities of the emergency medical units in 2009

DOCTORS		NURSES - TECHNICIANS		DRIVERS
Total	Specialists	College medical degree	High school medical degree	
103	74	4	106	65

**Commercial companies and other legal entities trained and equipped for protection and rescue**

Commercial companies and other legal entities that are by way of their activity trained and equipped for protection and rescue activities are: utilities, construction companies, water management, forestry, catering, mining and transport companies and other legal entities, firms in the field of private security, commercial aviation, associations, unions, companies and clubs in the field of firefighting, kennology, diving, sailing, alpine climbing, cave exploration, amateur radio, mountain rescue forces, scouts and other firms of importance in protection and rescue.

**Table 12.** Overview of commercial companies trained and equipped for protection and safety

No	LEGAL ENTITY	ACTIVITY	SCOPE OF ENGAGEMENT
1.	Public Health Institute Niš	Health care	Radiological, chemical, biological (biology lab), medical first aid
2.	Workers' Healthcare Institute Niš	Health care	Radiological, chemical, biological (radiation and chemical lab)
3.	Niš road company	Construction	Protection and rescue from ruins
4.	Niš Veterinarian Institute	Veterinarian protection	Animal protection and safety
5.	Diving club "Gusar", Niš	Rescue on water	Flood protection and rescue on and under water
6.	Red Cross Organization Niš	Social	Care for endangered persons and casualties
7.	Public company "Naisus" Niš	Utilities	Radiological, chemical, biological protection
8.	Public company "Niskogradnja" Niš	Utilities	Rescue from ruins
9.	Public company "Medijana" Niš	Utilities	Sanitation, radiological, chemical, biological protection
10.	Joint-stock company "Kosanica" Niš	Construction	Rescue from ruins
11.	Niš Department of Emergency Medicine	Health care	First aid
12.	Niš Health Center	Health care	First aid
13.	Joint-stock company "Nišekspress" Niš	Traffic	Evacuation
14.	Joint-stock company "Airport" Niš	Traffic	Evacuation
15.	Public company "Srbijašume" Niš	Agricultural	Radiological, chemical, biological protection
16.	Water management company "South Morava" Niš	Water management	Flood protection
17.	Joint-stock company "Žitopek" Niš	Radiological, chemical, biological testing	Radiological, chemical, biological protection and care
18.	"1. Maj" Institute Niš	Radiation analysis	Radiological, chemical, biological testing, radiological, chemical and biological protection
19.	UKC Niš	Health care	First aid



20.	Niš Student Center	Social	Care for endangered population
21.	Commercial company "Jugoistok" branch office electric power distribution Niš	Electric power distribution	Blackouts and masking
22.	Radio club "Nikola Tesla"	Other activities	Communication outside of the observation and notification service

### **Serbian Red Cross**

The Serbian Red Cross takes part in preparing and carrying out the protection and safety tasks in accordance with public notifications and planned activities. The Serbian Red Cross adopts a plan and implements a program of preparation for action in accidents in cooperation and with the coordination of the competent governmental authorities. The Serbian Red Cross consists of the provincial, city and municipal Red Cross organizations.

**Table 13.** Capacities of the Regional Assistance Unit in Niš

TEAM MANAGEMENT	FIRST AID	TECHNICAL SUPPORT	CARE FOR PEOPLE	TOTAL
4	11	6	15	36

### **Observation, early warning, notification and alert system**

The main task of the observation, early warning, notification and alert system is the discovery, monitoring and gathering of data on all types of danger that pose a potential threat to people, the environment, material and cultural goods. Included in the observation, early warning, notification and alert system are: the 112 service, governmental administration bodies, the police, the Serbian Armed Forces, commercial companies, public interest services and other legal entities that include in their regular business activities the activities of monitoring, recording, analyzing and forecasting certain occurrences and conditions in hydro-meteorology, seismology, fire prevention, water management, chemical and radiation protection, healthcare, agriculture, electric power industry, traffic and other fields.<sup>57</sup>

The following exist in the territory of the city of Niš: Operational Center (985 notification center); observation stations and a Public Alert System.

The Operational Center (the Notification Center for the City of Niš) operates as an integrated communication and information center. It is in charge of all the activities in the system of successful linking and cooperation with institutions, companies and other entities and provides the necessary contact points (telephone numbers, mobile) for timely and successful communication.

The Notification Center works from 00:00 to 24:00 and the work is conducted in shifts. The Center's telephone number 985 is the access telephone for the area of the Nišava administrative district. There are three access lines on this number. This number will be used until the introduction of the 112 number as the integrated number for the whole territory of the Republic of Serbia. The Notification Center is also linked to the municipalities in the district by USW radio. It also has a radio connection with the other bordering administrative districts, and is also connected to the bordering

<sup>57)</sup> Law on Emergency Situations, "Official Gazette of RS", No 111/09

districts through the special TT connection system. The equipment currently used for communication is outdated and its technical resources have long since run out, but regular maintenance and proper and careful use keeps it operational. More modern technical devices need to be provided that would match the dynamics of advancement of telecommunication and information instruments. The location housing the Center is not appropriate for the requirements and functions of the Center.

Observation stations are organized for the purpose of gathering information on potential dangers, effects and consequences of natural and other disasters.

The alert system consists of the necessary public sirens, devices, connection routes and technical means for management, as well as their organization, location, handling procedure, use and maintenance. 62 electrical and one electronic sirens have been mounted in the territory of the City of Niš. The City of Niš has a central alert system with 42 electrical and one electronic siren.

The City of Niš has encountered the problem of extension of apartment buildings on which the sirens have been mounted. Namely, the contractors, without the consent and knowledge of the Center, dismantle the sirens, construct the extensions and then do not return the sirens, or if they do, they do not carry out all the work necessary to properly connect them. The City also has the problem of uneven coverage of the City regarding the sirens, as they were mounted at the beginning of the 1980s. The existing acoustics study does not take into account certain areas of the City, as they did not exist at the time. This problem is particularly pronounced in Donji and Gornji Komren, the Durlan settlement (end of Knjaževačka Street), at Bubanj and in the rural settlements with several thousand inhabitants: Novo Selo and Nikola Tesla. There is also a problem with the remote alert system which is outdated and encounters numerous problems in the attempt to protect the system from activation due to malfunction.

### **Media**

The media play an important role in informing the public of emergency situations. The City of Niš has a sufficient number of local media that can be used as an important capacity in emergency management.

#### **4.5.2. Capacities of the protection and rescue system**

The structures and means for protection and rescue include shelters and other protection facilities, warehouses, protection and rescue equipment and tools, training equipment, means of transportation, telecommunication and alert devices and other instruments used in protection and rescue activities. The capacities of the protection and rescue system at the disposal of the City of Niš are shown in tables 14-23.

**Table 14.** Number of basic protection shelters in the territory of the City

Territory	City of Niš
Number of shelters	<b>170</b>

**Table 15.** Current and planned capacities of the Department for Emergency Situations

CAPACITIES (devices, equipment)		VEHICLES		ELECTRICAL GENERATORS	FIREFIGHTING PUMPS	BOATS
		Firefighting	Passenger			
Current	Niš	22	14	8	29	7
	Aleksinac	3	4	1	4	0

	Svrljig	3	2	1	1	0
	Doljevac	1	0	0	1	0
	<b>TOTAL:</b>	29	20	10	35	7
<b>Current</b>	Niš	25	15	10	30	7
	Aleksinac	5	5	3	7	2
	Svrljig	4	3	2	3	0
	Doljevac	4	2	2	3	1
	<b>TOTAL:</b>	38	25	17	43	10

**Table 16.** Quartermaster and rear equipment and mechanical and technical equipment

EQUIPMENT AND DEVICES	TYPE	NUMBER
Quartermaster and rear equipment	Command tent large ŠVK-M-70	13
	Storage tent ŠM-M-70	34
	Portable kitchen 25l (for food transport)	11
	Sleeping bags	670
	Sleeping mats	95
	Tarpaulins	300
	Blankets	380
Mechanical and technical equipment for rescue and clearance	Hard hats	1340
	Dust/smoke respirators	516
	«JEKLO» sets	9
	Concrete bar croppers	55
	Universal and manual hoist from 1-5,5T	5
	Pulley tackle and rope (various)	121
	Extension ladders and roof ladders	97
	Wood motor saws	4
	1,5 - 5,5 Kv generators	25
	Motor pumps "Rosenbauer" and "Honda"	15
Mechanical and technical equipment for radiological, chemical and biological protection and chemical accidents	Protective masks	2
	Protective gloves and gowns	cca 1900
	Dosimeter	40
	Radiological and chemical detectors	20
	Protective aprons and overalls	200
	Radiometric laboratory "LARA -10"	2
Mechanical and technical equipment for firefighters	Firefighter helmets	50
	Fire buckets	220
	Fire brooms	100
	Fire extinguishers	35

	Asbestos blankets	46
	Asbestos suits	18
	Fire resistant suit „Neplan“	11
	Backpack fire pumps	21
	Firefighting hooks	90
Mechanical and technical equipment for rescue on and under water	Boat with boating equipment	2
	Landing craft D-10	6
	Inflatable vests	38
	Outboard motor „Tomos“	2

**Table 17.** Overview of the healthcare capacities of the Nišava administrative district and the City of Niš

DISTRICT/ CITY	Bed capacity (mandatory)	General medical aid teams	Surgical teams	Ambu- lances	High-technology equipment
Nišava administrative district	2.994	125	18	56	4 angiography rooms, operating room, 5 x-ray machines, 8 portable x-ray machines, 3 scanners, 1 burner, 1 brachytherapy apparatus, 2 mammography machines, 2 MRI machines, holter monitor, Doppler ultrasound, electro-diagnostic apparatus., 2 densitometers, 12-channel ECG, 4 combi-buses, 1 eight-seat dialysis vehicle, ...
City of Niš	2.854	72	16	25	4 angiography rooms, operating room, 5 x-ray machines, 8 portable x-ray machines, 3 scanners, 1 burner, 1 brachytherapy apparatus, 2 mammography machines, 2 MRI machines, holter monitor, Doppler ultrasound, electro-diagnostic apparatus., 2 densitometers, 12-channel ECG, 4 combi-buses

**Table 18.** Capacities of emergency medical units (number, type and equipment of vehicles) in 2009

TYPE OF VEHICLE	NUMBER	EQUIPMENT
Ambulances for emergency medical assistance – Citroen Jumper 3	15	full
Ambulances for transporting patients within the city territory– Citroen Jumper 2	7	partial
Ambulances for hemodialysis - Citroen Jumper 2	7	unequipped
Ambulances for transporting patients outside the city territory – 3 Volvo, 1 Fiat Dukato	4	partially equipped

Spare ambulances – Fiat Dukato	5	partially equipped
Mass-accident ambulance – Pinz-Gauer	1	partially equipped
Technical support vehicle – Lada-Niva	1	
Procurement and administration passenger vehicles – 1 Citroen BX, 2 Zastava 101	3	

**Table 19.** Overview of shelters in the City of Niš (in emergency situations)

Shelter facility	Capacity	Status (ownership-competence)	Equipment requirements	Equipper
Sports halls Elementary schools High schools Local community offices	2430	City of Niš	2430 beds 4860 blankets 2430 pillows 2430 bed linens	Niš Red Cross

**Table 20.** Overview of number of tank trucks for distribution of drinking water

No.	CITY/MUNICIPALITY	TANK TRUCKS		
		Number	Volume (l)	Owner
1	Niš	2	9.000	Public utilities company "Naisus" Niš Niš Police Department
		3	7.500	
		1	7.000	
2	Aleksinac	3	5.500	Aleksinac Police Department
3	Svrljig	1	8.000	Public utilities company Svrljig
4	Merošina	?	?	?
5	Doljevac	?	?	?
6	Gadžin Han	1	3.000	Municipality Assembly-Gadžin Han
7	Ražanj	?	?	?
TOTAL		11	35.000l=35m <sup>3</sup>	

**Table 21.** Overview of machinery of public and socially-owned companies

COMPANY NAME AND PLACE	MACHINERY													
	Dumper truck	Bulldozer	Car-hoist	Backhoe	Fork lift	Compressor	Loader	Backhoe	Excavator	Grader	Hauler	Roller	Motor tank wagon	Tractor
Road company "Niš"	45	4					8		2	6	1	18		
Socially-owned water management company "South Morava" Niš	10	4					4		3		1			
Public company "Medijana" Niš	7			1			1							

Socially-owned company "Niskogradnja" Niš	25	4					5			2	1	18	3	
Socially-owned company "Građevinar" Niš	43	3	2				2	2			1		2	
Public company "Naissus" Niš	5	1		7	1	1	2							
PP "Morava" Aleksinac	10	3		5		1	1							1
Utilities company "Merošina" Merošina													1	1
Public company "Komunalac" Ražanj	1	1												1
Public company "Šljunkara" Doljevac	1						2							
Public company "Doljevac" Doljevac	1													1

**Table 22.** Capacities of the Red Cross – Regional Assistance Unit

<b>Equipment</b>	Personal equipment
	First aid equipment
	Equipment for shelters
	Equipment for illuminating settlements
	Equipment for providing drinking water and water for hygiene purposes (at the level of the Republic)
	Care and hygiene equipment
	Equipment for kitchen – dining hall
<b>Capabilities</b>	Temporary shelter (tent camp) with water, electricity, dining hall for 180 persons
	Maintaining hygiene, providing first aid, psychological and social support and record-keeping
	Cooperation with emergency medical units, firefighting and rescue forces and others

**Table 23.** Capacities of the Armed Forces located in the Niš garrison

Firefighting motor vehicle for extinguishing fires with water and foam (every department)
"Rozen-Bauer" pump, with accompanying firefighting equipment (every department)
Other standard equipment
4 water supply tank trucks

#### 4.5.5. Education and training

Both formal and informal education is conducted in the field of emergency situations. Formal education is carried out at the faculties of the Niš University. The Faculty of Occupational Safety in Niš should particularly be pointed out, since an accredited study program in the field of emergency management will commence in school year 2010/2011. Informal education in this field takes place through seminars, training courses and classes held by the Department for Emergency Situations, Emergency Medical Service, Red Cross, the Serbian Armed Forces, and non-governmental organizations.

Training of civil protection teams and special protection and rescue teams takes place both in the country and abroad. Joint exercises are also organized for testing preparedness for action in emergency situations, as are international military and medical exercises.

#### 4.5.6. Protection and rescue documents

Until the rendering of the documents in accordance with the Law on Emergency Situations, the City will use the following documents:

1. Decision on protection of persons and property in crises and educating the City Emergency Management Headquarters
2. Assessment of threats, requirements and capacities for protection and rescue of the population and material and other goods from natural disasters, technical and technological accidents and other threats in peace and war
3. Civil protection deployment plan
4. Plans for protection from natural disasters that could take place in the territory of the City of Niš







***CITY OF NIŠ STRATEGY FOR SAFETY***

***CHALLENGES AND  
POSSIBILITIES***

***Section 3***

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## **1. SWOT ANALYSIS**

SWOT analysis is taken over from business economics and is used to identify the following factors: strengths, weaknesses, opportunities and threats, taking into account both internal and external factors.

**STRENGTHS** are resources that a given area can use to advance its territorial system and competitiveness.

**WEAKNESSES** are limitations, mistakes, deficiencies which prevents a given area from advancing its territorial system.

**OPPORTUNITIES** are favorable situations in the area (city/region).

**THREATS** are unfavorable situations in the area (city/region) which could potentially endanger the Strategy.

SWOT analysis is prepared at the workshops of the operational team.

The analysis covers the defined safety fields:

- a) economics,
- б) social surroundings
- в) environment and
- г) emergency situations.

Considering the mutual connection and causality of ensuring safety, as well as the interweaving of the factors that could disrupt it, the SWOT analysis is integrated for all the fields.

<b>ADVANTAGES (strengths)</b>
<ul style="list-style-type: none"> <li>• Developed network of educational institutions (elementary and high schools)</li> <li>• Educational scientific institutions (university, faculties and institutes)</li> <li>• Adopted (or being developed) strategic and plan documents (Development Strategy for the City of Niš, Housing Strategy, Integration Strategy for Refugees and Temporarily Displaced Persons, Action Plan for Children, Social Protection Strategy, General Urban Plan currently being prepared, urban plans, plans for protection of the City from natural disasters and technical, technological and other accidents, general and operational plans for protection from fire, floods...)</li> <li>• Tradition in industrial manufacture</li> <li>• Developed network of healthcare institutions, good equipment with diagnostic devices and orientation towards primary healthcare</li> <li>• Communication and telecommunication infrastructure</li> <li>• Spatial and geomorphologic characteristics of the territory of the city (land, thermal waters, climate)</li> <li>• Professional, educated and expert personnel in the fields of healthcare, education, police, responding in emergency situations</li> <li>• Existence of non-governmental organizations (or existence of the civil sector)</li> <li>• Favorable ratio of the number of families to the number of constructed apartments</li> <li>• Existence of industrial work zones – spatial function and purpose</li> </ul>

- Trend of decrease of the general crime rate
- Relatively satisfactory spatial coverage of the territory of the city with police stations
- Real local-patriotism and a sense of belonging to the city
- Lack of visible displays of religious and national extremism
- Ever greater public insight into the work of institutions and the local self-government
- Monitoring the environmental parameters
- Favorable water supply (sources and a circular water-supply ring)
- Existence of a central collector for collection and transport of wastewaters
- Existence of protected areas
- Organized collection of waste in the city area and existence of facilities for the treatment of medical waste in medical institutions
- Existence of institutions, commercial companies and other legal entities for responding in emergency situations
- Organized civil protection system at the local level and existence of crisis headquarters
- Constructed flood defense systems and an alternative water supply system
- Awareness of the need to increase the level of safety in the fields of economics, environment, everyday life and planning responses to emergency situations at the local level
- Existence of local media

#### **WEAKNESSES**

- Monopolistic position of companies in the public sector
- Poor infrastructure
- Inadequate industrial structure (outdated technology, insufficient exploitation of existing production capacities)
- Dominant role of trade
- Fragmentation of farming land
- Lack of harmonization between the labor market and education
- Lack of stimulative measures
- Poor efficiency of local administration
- Bad privatization
- Lack of “economic local patriotism“
- Lack of brands relating to the City of Niš
- Inadequate consumer protection
- Lack of practical local policies for decrease of poverty and systematic monitoring of poverty
- Decline of social values and of general social solidarity
- Migration of the population towards the urban center and towards the developed parts of Serbia (outflow of personnel)
- Increasing frequency of domestic violence
- Lack of personnel with appropriate training for providing specific forms of protection in the domain of social security
- Weaknesses in the application of the current legislation in the domain of social security and social protection
- Undeveloped social networks and lack of informal education in the domain of social cohesion and safety of individuals and certain social groups

- Insufficient availability of appropriate housing (poor and socially endangered persons)
- High current expenses for housing as compared to the families' financial means
- Unsatisfactory quality of housing in the rural areas
- Old electric installations and joinery in educational institutions
- Insufficient care for the children in educational institutions
- Insufficient level of inclusion in education with regard to certain social groups
- Unsatisfactory level of safety in educational institutions
- Citizen passivity and insufficient civil activism
- Lack of institutional mechanisms for including the public in decision-making
- Low level of safety awareness at all levels
- Insufficient spatial and technical equipment of institutions for new forms of threatening safety
- Lack of organized care and work on including individuals after serving their sentence
- Unsatisfactory condition and poor capacity of the road infrastructure in the city center and in the territory of the city in general
- Position of the infrastructure nodes (railway and bus station, airport)
- Lack of defined corridor for transport of hazardous substances
- Old and unsafe motor pool
- Lack of an Emergency Room
- Insufficient capacity of the emergency medical teams
- Lack of coordination between emergency responders (primary healthcare, civil protection, firefighting and rescue teams)
- Low percentage of housing and industrial facilities in the city
- Lack of register of polluters
- Insufficiently regulated riverbeds
- Lack of irrigation and drainage systems
- Uncontrolled use of chemicals in agriculture
- Conversion of agricultural into development land
- Lack of coverage of all rural areas with a city water supply system
- Lack of drinking water quality control in rural areas
- Age of the waterworks pipelines and use of asbestos pipes in part of the water supply network
- Inadequate quality control of water in public drinking fountains
- Lack of a central wastewater purification system
- Disrupting the biodiversity (uncontrolled picking of medicinal herbs and forest fruits, poaching)
- Lack of organized collection of communal waste in rural areas
- Lack of communal waste dump in accordance with EU recommendations
- Inappropriate waste disposal
- Lack of acoustics study for the requirement of upgrading of alert system
- Inadequate coverage of the city with firefighting and rescue teams
- Insufficient technical equipment and technological obsolescence of the equipment of emergency responders
- Inadequate location of the production and storage capacities for hazardous substances
- Existence of landslides and erosion areas
- Existence of unexploded ordnance and lack of field for the destruction thereof
- Underdeveloped public alert system in case of emergency situations

**OPPORTUNITIES (possibilities)**

- Cross-border cooperation
- Exploitation of natural and cultural resources for tourism purposes
- Development of small and medium companies
- Niš-trade center (Customs-free zone. Cargo center.)
- Production of health food
  
- Utilization of alternative energy sources and increase of the share of renewable energy sources in generating electricity
- Advancement of public awareness and forming a non-violence culture and safety culture on all levels, primarily among the youths
- Better networks connecting the existing institutions
- Reconstruction and construction of a new clinical center
- Reorganization of the primary healthcare system (opening health centers in all municipalities)
- Introducing new educational profiles and new educational content in the domain of safety into existing profiles on all levels of education
- Strengthening of the social housing function
- Strengthening of civil activism
- Connection of energy plants to gas network
- Transformation of city transportation to non-polluting fuel (electric, gas),
- Adopting plans and programs for improving the soil quality, enriching the soil
- Water supply from the regional system "Selova"
- Use of ground waters for irrigation and technological requirements
- Declaring new protected areas
- Implementing the municipal police program
- Construction of a regional dump
- Construction of recycling centers
- Educating the population on separate waste collection
- Integration of preventive measures for chemical accidents into spatial and urban plans
- Forming an integrated emergency response system
- Constructing a regional multi-purpose training field for protection and rescue
- Forming a regional center for responding in emergency situations
- Building efficient mechanisms for urgent response in emergency situations
- Development of regional capacities for emergency response
- Forming mobile eco-toxicological teams
- Introducing the norms and standards of the European Union
- Utilizing EU Funds
- Forming emergency Funds

**THREATS**

- World economic crisis
- Lack of funds
- Unstable market
- Incomplete privatization of state-owned companies
- Increase of corruption due to failure to observe the adopted anti-corruption policies
- Destruction of the forest potential
- Ruining of small distributors
- Further impoverishment of the population
- New forms of crime (high-technology, organized etc.)
- Further degradation of the system of values and lowering the level of social involvement. Proximity of regions with pronounced criminogenic phenomena
- Increased risk of illness as a result of living conditions
- Increased risk of technical and technological accidents
- Climatic changes
- Degradation of the Nišava
- Changes in the ecosystem due to the level of the rivers falling below the biological minimum
- Lack of strategy and plan documentation for protection and rescue in emergency situations
- National legislation unharmonized with EU legislation
- Uncertified National Contact-Point
- Artificial reservoirs upstream of Niš
- Increased energy consumption and dominant share of fossil fuels in the consumption
- Lack of continued education in the field of safety

## **2. NEEDS**

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After comprehensive discussions held in the course of preparing the Safety Strategy for the City of Niš and the SWOT analysis, the following needs have been identified and ranked by priority of fulfillment:

1. RAISING THE LEVEL OF SAFETY AWARENESS
2. MORE EFFICIENT OPERATION OF THE LOCAL SELF-GOVERNMENT
3. SAFE ENVIRONMENT FOR SUSTAINABLE ECONOMIC DEVELOPMENT
4. HIGHER LEVEL OF SERVICES IN THE PUBLIC SECTOR
5. SAFER COMMUNAL INFRASTRUCTURE
6. HIGHER QUALITY OF LIFE IN THE RURAL AREAS
7. SAFETY IN SCHOOLS
8. CARE FOR THE POOR AND MARGINALIZED SOCIAL GROUPS
9. SAFETY OF THE ENVIRONMENT
10. EFFICIENT AND SAFE WASTE MANAGEMENT
11. DEVELOPMENT OF PROTECTION AND RESCUE INSTITUTIONS, POTENTIALS AND CAPACITIES

## **3. VISION**

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In the adopted City of Niš Development Strategy 2007 one of the defined strategic directions for development of the City was social development and the general goal

*Create and encouraging and safe social environment in which all citizens will be able to express and fulfill their needs for belonging and identity, socialization and personal growth.*

Project 5 of the adopted Strategy, **City of Niš – Just City, our key for Safety**, analysis of the safety situation in the territory of the City of Niš, the expressed needs and adopted priorities, as well as envisioning the future in the City through economic, social, ecological security and safety in emergency situations have brought about the general vision:

*Niš shall become an economically, socially and ecologically safe city which permanently strengthens the institutions for advancing safety, acts to prevent and appropriately resolves safety risks and threats for the purpose of improving the quality of life of its citizens.*



This vision can be realized through synchronized and coordinated activities, actions and measures of the institutions of the system and the civil sector, which should contribute to the change of the way individual citizens, but also institutions act in raising awareness of the necessity for care for personal safety in everyday life and for collective safety in the territory of the City.

The slogan

***Niš – Safe City***

best expresses the vision of the City of Niš as a local community in which the local bodies promote and take responsibility for creating:

- a favorable business environment;
- conditions in which it is possible to achieve personal wellbeing, and individual, social, cultural, moral and spiritual advancement;
- higher quality environment, and
- conditions for an appropriate response in emergency situations.



**CITY OF NIŠ STRATEGY  
FOR SAFETY**

**STRATEGIC  
GOALS**

**Section 4**

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## 1. ECONOMIC SECURITY

### GENERAL GOAL

Increasing the standard of living by creating a more favorable business environment, increasing employment, improving the image of the City and increasing the level of safety at work.

### SPECIFIC GOALS

1. Creating a favorable business environment in the City of Niš as regional center
2. Increasing employment
3. Improving the image of the City
4. Increasing the level of safety at work, in the private sphere and in city transport

SPECIFIC GOALS	ACTIVITIES/MEASURES
<p style="text-align: center;"><b>1. CREATING A FAVORABLE BUSINESS ENVIRONMENT IN THE CITY OF NIŠ</b></p>	Forming development Funds for providing financial assistance to companies
	Financial assistance to companies through favorable loans
	Institutional support for opening new production capacities based on good practice (permits, consents) etc.
	Forming a business incubation center
	Taking initiatives to the competent institutions for obtaining stimulations and benefits through exemption from VAT
	Taking initiatives to the competent institutions for obtaining stimulations and benefits through exemption from customs duties.
	Stimulations and benefits in the founding of new production and trade facilities through exemption from paying charges for utilities.
	Raising the quality of human resources through permanent education, specialization, additional training and vocational training
<p style="text-align: center;"><b>2. INCREASING EMPLOYMENT</b></p>	Opening new small and medium enterprises
	Advancement of rural, health, transitional, hunting and congress tourism
	Self-employment
	Opening production capacities for the production of recycling equipment, protection of the work environment and the environment in general
	Subsidizing the production of health food

<b>3. IMPROVING THE IMAGE OF THE CITY</b>	Commemorating important events ("January 11 <sup>th</sup> ", "February 12 <sup>th</sup> ", "October 14 <sup>th</sup> ", the Čegar battle...)
	Organizing manifestations (International Choir Festival, Film Festival, Nišville, Edict of Milan, ...)
	Promoting the cultural heritage (Čegar, Medijana, Čele Kula...), institutions and individuals
	Promoting natural resources (Niška Banja spa, Cave of Cerje, Banja Topilo spa, Sićevac Gorge, Jelašnica Gorge, Bojanine Vode, Kamenica Heights ...)
	Branding the City (Catering – health food and beverages, Niš – center for protection of the work and general environment and emergency management)
	Niš – City of fairs
	Creating necessary conditions for organizing sports activities at various levels and for the promotion thereof
<b>4. INCREASING THE LEVEL OF SAFETY AT WORK, IN THE PRIVATE SPHERE AND IN CITY TRANSPORT</b>	Education in the field of safety and health at work for employees and the population
	Raising public awareness of the importance of safety and health at work by commemorating important dates (April 4 <sup>th</sup> – Serbian Day for Safety and Health at Work Day; April 28 <sup>th</sup> – World Day for Safety and Health at Work; last week in October – European Week for Safety and Health at Work)
	Informing on injuries, consequences of work-related injuries and traffic accidents
	Continual promotions in the field of safety in the performing of everyday household activities and organizing campaigns on safety in traffic

## 2. SOCIAL SECURITY

### GENERAL GOAL:

Creating favorable conditions for improving the safety of individuals and social groups in the City by satisfying the needs of the citizens, protecting their rights, systematic improvement of educational, healthcare and social policies, family protection and protection of personal safety.

### SPECIFIC GOALS:

1. Raising the level of safety awareness
2. Strengthening the mechanisms for more efficient operation of the local self-government, particularly in the field of safety
3. Raising the level of health safety and public awareness of health risk factors
4. Raising the level of safety in educational institutions
5. Decreasing poverty and increasing care for marginalized social groups
6. Strengthening the mechanisms for preventing and fighting all forms of crime

SPECIFIC GOALS	ACTIVITIES/MEASURES
<b>1. RAISING THE LEVEL OF SAFETY AWARENESS</b>	Identifying and mapping public places in the City with increased risk for safety of the population and continued notification in the media
	Continued promotion of safety culture through promotional activities at sports and cultural manifestations
	Promoting the importance, role and function of the safety sector among high-school and university students through educational visits of members of the police and armed forces to elementary schools, high schools and universities, as well as visits of students to these institutions
	Advancement of informing in the field of safety and health at work
	Support to the informing of the population on safety risks in public places and ways of avoiding those risks (support to the media to research and inform on the risks)
	Advancement of informing in the field of protection from fires and explosions
	Promoting the importance of environmental protection, particularly of separate waste disposal and fire prevention in educational institutions
	Organizing fishing competitions for school children combined with education on the importance of preserving the fish fund and diversity

	Promotion of peer, religious and national tolerance in educational institutions
	A forum on the City website
<b>2. STRENGTHENING THE MECHANISMS FOR MORE EFFICIENT OPERATION OF THE LOCAL SELF-GOVERNMENT, PARTICULARLY IN THE FIELD OF SAFETY</b>	Introducing a quality system into municipalities
	Systematic gathering of data and publishing annual analyses of safety risks, violence, and undertaken preventive measures
	Broadening the competence of the Safety Council as a separate body of the Niš City Assembly
	Support to the mutual connection of non-governmental organizations dealing with the problem of safety in the City
	Enhanced operation of the communal police
<b>3. RAISING THE LEVEL OF HEALTH SAFETY AND PUBLIC AWARENESS OF HEALTH RISK FACTORS</b>	Opening and equipping healthcare practices, emergency rooms and pharmacies in the urban and rural areas where there are none
	Constructing and equipping an Emergency Room within the clinical center
	Educating employees in healthcare, education and other sectors included in preventive activities aimed at fighting and preventing addictions
	Organizing campaigns for prevention of addictions
	Care for the sick and helpless – opening a clinic for terminal cancer patients and patients suffering from stroke
	Implementing programs for promotion of health and recognizing health risk factors
	Implementing programs for additional training, vocational training and employment of rehabilitated addicts and addicts returning from serving a sentence
	Expanding the program of medical care and home assistance for old, ill and frail persons
<b>4. RAISING THE LEVEL OF SAFETY IN EDUCATIONAL INSTITUTIONS</b>	Forming a City body for coordinating activities for protection of school children from violence, with participation of representatives of the Center for Social Work, Ministry of Internal Affairs, Health Center and local self-government
	Forming joint teams of experts (childcare facility “Pčelica” and Center for Social Work) for prevention of antisocial behavior of children in preschool facilities
	Establishing an operational multi-resource network for child protection, support to schools and the family (Center for Social Work, Ministry of Internal Affairs, School Department, Department of Education, non-governmental organizations)
	Forming a database of children with behavioral issues
	Including no less than 80% of elementary and high schools in the territory of the City into the “School Without Violence” program

	Conducting a campaign to interest the business sector in providing Financing for implementation of the "School Without Violence" program (partnership between the commercial company and the school)
	Adopting, at City level and with participation of the School Department, procedures and mechanisms for recording violence in school and implementing protection measures
	Preparing and adopting a program for protection of children from violence in no less than 80% of elementary and high schools
	Training teachers and school staff on the application of the Special Protocol on protection of children and students from violence, abuse and neglect in educational institutions
	Training teachers and school staff on violence, communication skills, open dialogue between children and adults and on the preventive role of school rules
	Training children/students to use various skills for constructive overcoming of conflicts
	Forming peer teams for protection and peer support
	Advancing the safety level of the physical environment (paths, access routes, yards, gyms, sports courts, lighting) in schools
	Inspecting and replacing old installations in schools
	Installing security cameras
	Broadening the school policeman network
	Organizing sports activities between schools for the purpose of promoting a healthy lifestyle
	Forming scouts, mountain-climbing and forestry sections
<b>5. DECREASING POVERTY AND INCREASING CARE FOR MARGINALIZED SOCIAL GROUPS</b>	Opening new work positions through stimulative measures for employment of new workers (forming teams to assist old, ill and frail persons, opening a center for terminal cancer patients and patients suffering from stroke)
	Improving the qualifications of the unemployed through vocational and additional training
	Conducting public works
	Greater social care for the poor
	Including the endangered groups in formal education, particularly the Romani population
	Providing assistance for solving the housing problems of the poor and marginalized social groups through reviving abandoned rural holdings
	Construction of social housing units and subsidizing the costs of living
	Care for employees with unregulated social, pension

	and healthcare status
<b>6. STRENGTHENING THE MECHANISMS FOR PREVENTING AND FIGHTING ALL FORMS OF CRIME</b>	Introducing a system for monitoring and evaluating the safety in the City
	Improving the technical equipment for monitoring and discovering new forms of crime
	Forming a team for monitoring the inclusion into society of persons after serving a sentence
	Forming expert bodies for monitoring juvenile delinquency
	Forming a team for monitoring and suppressing drug addictions among youths
	Counseling for fighting domestic violence and violence towards the elderly
	Improving the public ability to recognize all forms of crime
	Shelter for children from the streets and their education



### 3. ECOLOGICAL SECURITY

#### GENERAL GOAL

Improving the quality of the environment in accordance with the principles of sustainable development.

#### SPECIFIC GOALS

1. Improving the system of protection and monitoring of environmental changes and of informing the public
2. Setting up an integrated waste management and dump rehabilitation system
3. Setting up a system for protection, preservation and sustainable exploitation of the land, natural resources and biodiversity
4. Preservation and sustainable exploitation of water sources, the water supply system and protection of the watercourses
5. Advancement of remote heating and connection to the gas network, applying the principles of energetic efficiency and use of alternative energy sources

GOALS	ACTIONS
<p style="text-align: center;"><b>1. IMPROVING THE SYSTEM OF PROTECTION AND MONITORING OF ENVIRONMENTAL CHANGES AND OF INFORMING THE PUBLIC</b></p>	Forming a register of environmental polluters
	Setting up an integrated system for monitoring ground and surface waters
	Development of an integrated system for monitoring the wastewaters of all polluters
	Forming an integrated database of sources of hazardous waste, dumps and warehouses of hazardous waste
	Valorisation of areas according to ecological criteria – preparing an ecological atlas of the City
	Introducing continual monitoring of air quality and noise at busy intersections in residential areas
	Defining the routes for transport of hazardous substances through the territory of the City
	Introducing and developing biological monitoring
	Setting up an integrated drinking water quality control system at all water catchments, public drinking fountains, the City water supply system and in the rural areas
	Designing a web portal intended for notifying and informing the public on the state of the environment

<b>2. SETTING UP AN INTEGRATED WASTE MANAGEMENT AND DUMP SANATION SYSTEM</b>	Forming a regional communal water dump
	Forming a collection recycling center
	Removing illegal dumps from the territories of all municipalities
	Setting up a system for collection and separation of recyclable waste in the entire territory
	Educating the population on the importance of selection and recycling of waste and introducing stimulative measures for households for selecting
	Education of the rural population on the importance and manner of composting waste
	Rehabilitation and recultivation of the existing dump
	Setting up a system for management (protection) of pharmaceutical, medical and toxic waste
<b>3. SETTING UP A SYSTEM FOR PROTECTION, PRESERVATION AND SUSTAINABLE EXPLOITATION OF THE LAND, NATURAL RESOURCES AND BIODIVERSITY</b>	Setting up a system for sustainable exploitation of agricultural land
	Introducing a program for recultivation of the soil and protecting the soil from erosion and landslides
	Setting up an irrigation and drainage system
	Testing the quality of agricultural land and preparing plans and programs for improving the quality and enriching the soil
	Education of the rural population in the use of chemicals in agriculture
	Increasing the size of the green areas in the City
	Forming a register of cultivated greenery in the City
	Taking inventory of the synurban flora, fauna, fungia in the territory of the City
	Introducing a program and annual plan for maintaining the greenery
	Landscaping green areas in preschool facilities and schools and in residential areas
	Declaring and protection of Seličevica, Kamenica Heights
	Protection of the Cave of Cerje, Srećko's Spring, Calafat, Topilo, Miljkovac Gorge, Lalinska Slatina
	Implementing a program for resolving the issue of stray dogs
	Preparing plans and programs for producing health food in the rural areas

<b>4. PRESERVATION AND SUSTAINABLE EXPLOITATION OF WATER SOURCES, THE WATER SUPPLY SYSTEM AND PROTECTION OF THE WATERCOURSES</b>	Reconstruction of the existing water supply network (replacement of all asbestos pipes and old pipes), decrease of losses in the network
	Constructing central water supply systems in all rural settlements
	Transferring to use of water from boreholes and underground wells for technological purposes, in the case of large consumers
	Education of the population on rational use of drinking water
	Constructing a central system for purification of City wastewaters
	Constructing a sewage system in the entire territory of the City
	Constructing a water supply system in the 4th altitude zone
	Setting up a wastewater management system in villages (constructing a sewage network and partial wastewater treatment systems)
<b>5. ADVANCEMENT OF REMOTE HEATING AND CONNECTION TO THE GAS NETWORK, APPLYING THE PRINCIPLES OF ENERGETIC EFFICIENCY AND USE OF ALTERNATIVE ENERGY SOURCES</b>	Increasing the energy efficiency of the remote heating system, decrease of losses in the network
	Setting up a standard for thermal protection of buildings in the construction stage for new buildings and reconstruction stage for old ones
	Education of the population in the rational use of energy
	Installing a system for measuring the usage of heat energy in all newly constructed buildings
	Constructing a gas network in all parts of the City
	Setting up a standard and preparing a program for exploitation of the energy from thermal springs, wind, solar energy and biomass

## 4. SAFETY IN EMERGENCY SITUATIONS

### GENERAL GOAL

Creating an integrated emergency management system which contributes to higher safety and lowering the risk of technical and technological, natural and anthropogenic influences.

### SPECIFIC GOALS

1. Creating an integrated emergency management system
2. Creating an integrated information and communication system for emergency management
3. Providing the necessary conditions for the more efficient functioning of the protection and rescue system at the City level
4. Improving the prevention of emergency situations
5. Improving education, training and informing

GOALS	ACTIVITIES/MEASURES
<b>1. CREATING AN INTEGRATED EMERGENCY MANAGEMENT SYSTEM</b>	Preparing and adopting plan documents for protection and rescue
	Providing the functional integration of protection and rescue forces
	Organizing civil protection
	Organizing emergency headquarters
	Forming mobile eco-toxicological teams
	Development of public-private partnerships
<b>2. CREATING AN INTEGRATED INFORMATION AND COMMUNICATION SYSTEM FOR EMERGENCY MANAGEMENT</b>	Improving the functioning of the City Situation Center
	Providing telecommunication and information support for the requirements of protection and rescue
	Horizontal connecting of protection and rescue forces at City level
	Vertical connecting with the Observation, notification and alert service
	Achieving international (regional) communication
	Creating the necessary conditions for permanent information of the population on safety risks and threats

<b>3. PROVIDING THE NECESSARY CONDITIONS FOR THE MORE EFFICIENT FUNDTIONING OF THE PROTECTION AND RESCUE SYSTEM AT THE CITY LEVEL</b>	Technical equipping and technical innovating of the equipment of the protection and rescue forces (Serbian Armed Forces; Emergency Medical Unit; Civil Protection; CK)
	Sufficient territorial coverage of the City with firefighting and rescue teams, police stations, emergency medical units
	Forming helicopter units for emergency response in case of accidents
	Preparing an acoustics study for the purpose of advancing the alert system
	Procurement, installing and maintaining alert devices (sirens)
	Constructing a field for destruction of unexploded ordnance
	Forming a regional emergency response center
<b>4. IMPROVING THE PREVENTION OF EMERGENCY SITUATIONS</b>	Innovating and adopting the Threat Assessment
	Preparing a hazard map
	Forming a cadastre of flood, landslide and erosion areas
	Regulating the beds of torrential streams
	Defining a corridor for transport of hazardous substances
	Medical security of Corridor 10
	Defining fire routes in zones with block housing
	Resolving the issue of traffic infrastructure (moving the Niš-Dimitrovgrad railway tracks along the Niš-Dimitrovgrad road (northern bypass), relocating the bus station, increasing the capacity of the road infrastructure in the City center, constructing a circular ring-road, constructing public parking garages)
	Locating the production and storage facilities for hazardous substances outside the city area
	Implementing construction and technical protection measures in the construction of buildings, in accordance with the assessed seismic risk
	Integrating preventive measures against chemical accidents into spatial and urban plans
	Constructing and maintaining an alternative water supply system
	Forming efficient mechanisms for urgent response to emergency situations
	Forming efficient mechanisms for fighting terrorism

<b>5. IMPROVING EDUCATION, TRAINING AND INFORMING</b>	Appropriate presentations and workshops with preschool children
	Establishing appropriate programs in elementary and high school education
	Development of university study programs in the field of emergency management
	Educating the population how to act in potentially dangerous and emergency situations (fires, floods, chemical accidents, terrorism, UXO)
	Constructing a regional protection and rescue training center
	Continuing the good practice of education and training through classes, seminars, training courses, practice exercises and trial mobilization
	Introducing informal types of education on informing in emergency situations



***CITY OF NIŠ STRATEGY  
FOR SAFETY***

***Section 5***

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***SOURCES  
OF FINANCING***

## **DOMESTIC SOURCES OF FINANCING**

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- BUDGET OF THE CITY OF NIŠ
- DEVELOPMENT FUND OF THE REPUBLIC OF SERBIA
- AGRICULTURAL DEVELOPMENT FUND OF THE CITY OF NIŠ
- SERBIA INVESTMENT AND EXPORT PROMOTION AGENCY - SIEPA
- NATIONAL INVESTMENT PLAN

## **FOREIGN SOURCES OF FINANCING**

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- EU INSTRUMENT FOR PRE-ACCESSION ASSISTANCE - IPA
- SOUTH EAST EUROPE TRANSNATIONAL COOPERATION PROGRAMME (SEE)
- ACCESS TO OTHER EU PROGRAMS 2007-2013
- EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT (EBRD)
- CREDIT LINE OF THE EUROPEAN INVESTMENT BANK (EIB)
- WORLD BANK IN SERBIA

## **OTHER SOURCES OF FINANCING**

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- DONOR PROGRAMS AND/OR PROJECTS





**CITY OF NIŠ STRATEGY FOR SAFETY**

**PROGRAMS  
AND PROJECTS**

**Section 6:**

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## **ECONOMIC SECURITY**

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### **1. SPECIFIC GOAL: INCREASING EMPLOYMENT**

#### **PROJECT: HUNTING TOURISM AS A FACTOR OF REGIONAL DEVELOPMENT**

<b>Project goals</b>	Increasing the number of employed, achieving a larger income, especially foreign currency income, and protecting the environment
<b>Activities</b>	<ul style="list-style-type: none"> <li>• Recording existing state</li> <li>• Educating hunters</li> <li>• Regulating hunting grounds</li> <li>• Creating a wild animal inventory</li> </ul>
<b>Expected results</b>	<ul style="list-style-type: none"> <li>• Protection of the environment, especially of wild animals</li> <li>• Increase of income from hunting grounds</li> <li>• Increase of number of employed</li> <li>• Increase of income from tourism and catering industry</li> </ul>
<b>Place of realization</b>	Urban municipalities (Niška Banja, Pantelej, Palilula and Crveni Krst)
<b>Partners</b>	<ul style="list-style-type: none"> <li>• Urban municipality Niška Banja</li> <li>• Urban municipality Pantalej</li> <li>• Urban municipality Palilula</li> <li>• Urban municipality Crveni Krst</li> <li>• Faculty of Occupational Safety</li> <li>• Faculty of Mathematics and Natural Sciences</li> <li>• Hunting Association „Niš“</li> <li>• German Hunting Association</li> </ul>
<b>Time of realization</b>	2010 – 2011.
<b>Potential Obstacles to Implementation</b>	Lack of Funds
<b>Project Budget</b>	40.000.000 RSD
<b>Financing Sources</b>	<ul style="list-style-type: none"> <li>• Fund for the Development of the Republic of Serbia</li> <li>• Foreign Donation (German Foundation- Hunting Association)</li> </ul>

## **SOCIAL SECURITY**

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### **2. SPECIFIC GOAL: RAISING THE LEVEL OF SAFETY AWARENESS**

#### **PROJECT: FORMING A NETWORK OF POLICE STATIONS ON THE TERRITORY OF NIŠ CITY**

<b>Project goals</b>	Forming a favorable and stable safety environment in the City
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<b>Activities</b>	<ul style="list-style-type: none"> <li>• Forming a project team</li> <li>• Preparing project documentation</li> <li>• Procuring equipment in accordance with the project documentation</li> <li>• Installing equipment</li> <li>• Procuring necessary software</li> </ul>
<b>Expected results</b>	<ul style="list-style-type: none"> <li>• Territorial and operative presence of the police</li> <li>• Opening of new jobs</li> <li>• Development of professional services</li> <li>• Better flow of information with complete exploitation of the latest informational-telecommunication equipment</li> <li>• Better coordination of the professional departments of the Police Department with other relevant entities, with the goal of suppressing serious and complicated forms of crime (organized crime, human trafficking, illegal migrations, high technology crime, etc.)</li> <li>• Establishing the role of the police as a “citizen service”, enabling better locational, technical and other conditions, necessary for the efficient achievement and protection of citizen rights</li> <li>• Creating better and more humane conditions which will increase the work efficiency of members of the police</li> <li>• Creating more modern conditions for the accommodation of professional vehicles, as well as for storage of auxiliary equipment</li> <li>• Employment of construction workers and construction design bureaus from the region</li> </ul>
<b>Place of realization</b>	Urban municipalities (Niška Banja, Pantalej, Palilula and Crveni Krst)
<b>Partners</b>	<ul style="list-style-type: none"> <li>• City of Niš</li> <li>• Urban municipality Niška Banja</li> <li>• Urban municipality Medijana</li> <li>• Urban municipality Pantalej</li> <li>• Urban municipality Palilula</li> <li>• Urban municipality Crveni Krst</li> <li>• Competent Ministry</li> </ul>
<b>Time of realization</b>	2011-2015.
<b>Potential Obstacles to Implementation</b>	Lack of funds
<b>Project Budget</b>	50,000,000 EURO
<b>Financing Sources</b>	<ul style="list-style-type: none"> <li>• Donor funds</li> <li>• Competent Ministry</li> <li>• City of Niš</li> </ul>

## **ECOLOGICAL SAFETY**

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### **3. SPECIFIC GOAL: IMPROVING THE SYSTEM OF PROTECTION AND MONITORING OF ENVIRONMENTAL CHANGES AND OF INFORMING THE PUBLIC**

**PROJECT:** CREATING A REGISTER OF POLLUTERS OF THE CITY OF NIŠ

**Project goals**

- Identifying the sources of emission of pollutants on the territory of the City of Niš
- Identifying geographical areas of interest
- Decreasing pollution from energetic and industrial plants and other sources to the lowest possible measure
- Establishing pollutant emission amounts and trends for the purpose of lowering the level of risk of their negative effect
- Increasing availability of information to the public, as well as its inclusion in the process of deciding on environmental
- Establishing a system for recognition of hazard and scope of vulnerability in case of accidents in high risk plants

**Activities**

- **Forming data base of polluters and high risk plants for the territory of the City of Niš**
- Preparing documentation (detailed project plan) for forming a data base of polluters on the territory of the City of Niš
- Creating a data base of polluters
- Preparing a Plan for collecting data on polluters on the territory of the City of Niš
- Preparing a Questionnaire for collecting data on economic entities that emit pollutants into the air and water and create solid waste
- Preparing a Questionnaire on high risk plants
- Distributing the Questionnaire to polluters
- Collecting data and entering the data into data bases
- Defining the appropriate GIS application for a map of polluters and high risk plants of the City of Niš
- Creating a map of polluters for the territory of the City of Niš
- Defining the appropriate software application for supporting evaluation of the effects of spreading of pollutants through various elements of the environment
- Testing the „polluter map“ application
- **Creating a map of high risk plants on the territory of the city of Niš**
- Defining the appropriate software application for supporting evaluation of the effects of physical installations
- Creating a risk map for most unfavorable cases of accidents in high risk plants or transport means with hazardous materials in the area of the City of Niš
- Testing the „risk map“ application

**Expected results**

- Register of polluters as basis for programs for preventing pollution in energetics and industry

- Enabling competent authorities to establish emission and transfer of pollutants, monitoring improvements in prevention of pollution, and, on the basis of that, implementing policies, identifying priorities and undertaking the necessary activities for the purpose of integral protection of the environment.

**Place of realization**

Territory of the City of Niš

**Partners**

- Department of Economy, Sustainable Development and Environmental Protection
- Department of Communal Activities
- Inspection authorities
- Public Utilities Company “Medijana“
- Faculty of Occupational Safety in Niš – Center for Management of Risk in Work and Living Environment
- Health Care Institute

**Time of Realization**

2010 – 2012.

**Complementarity with other ongoing initiatives**

Establishing emission monitoring. The Register of Polluters relies on application of the obligation of monitoring emission of pollutants into the air and water, as well as the obligation of characterization and classification of waste

**Potential Obstacles to Implementation**

Lack of funds

**Project Budget**

10,000,000.00 dinars, first year 3,000,000.00

**Financing Sources**

- City Budget
- Assets from the Fund for Protection of the Environment

## **SAFETY IN EMERGENCY SITUATIONS**

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### **4. SPECIFIC GOAL: CREATING AN INTEGRATED INFORMATION AND COMMUNICATION SYSTEM FOR EMERGENCY MANAGEMENT**

**PROJECT:** DEVELOPMENT AND IMPLEMENTATION OF INFORMATION AND COMMUNICATION SYSTEM FOR EMERGENCY MANAGEMENT

<b>Project Goals</b>	<ul style="list-style-type: none"> <li>• Creating an integrated information and communication system for emergency management</li> <li>• Improving the quality of communication between entities in the safety system and protection and rescue teams</li> <li>• Strengthening mechanisms of management and coordination in emergency situations</li> <li>• Establishing a concept of proactive emergency management</li> <li>• Establishing an effective system of response to emergency situations</li> </ul>
<b>Activities</b>	<ul style="list-style-type: none"> <li>• Forming a project team</li> <li>• Preparing project documentation</li> <li>• Procuring equipment in accordance with the project documentation</li> <li>• Installing equipment</li> <li>• Obtaining the necessary software</li> <li>• Establishing an information system for emergency management support</li> <li>• Training operators and other system users</li> <li>• Monitoring the established system</li> </ul>
<b>Expected results</b>	<ul style="list-style-type: none"> <li>• Established modern communication and information network of systems for emergency situation informing and management</li> <li>• Established functional integration of departments, beneficial for protection and rescue and emergency management</li> <li>• Established procedural system for making quick decisions in the process of emergency situation response</li> <li>• Established monitoring system with dynamic supervision of potential risks and safety threats</li> <li>• Completed data bases which will enable analysis, modeling and forecast of potential dangers, vulnerabilities and consequences</li> <li>• Better coordination of entities and forces for safety and protection in emergency situation response phase</li> <li>• Situation Center with modern equipment</li> <li>• Establishing call-centers in relevant departments for emergency management</li> <li>• Increased level and quality of horizontal connection between the entities in the protection and rescue system at City level</li> <li>• Increased quality of vertical connection of the Situation Center with the operative and National Center 112</li> <li>• Established system of mobile communication centers</li> <li>• Entities and protection and rescue teams equipped with modern information and communication technology</li> </ul>

<b>Place of realization</b>	• Lower risk of natural disasters and technological accidents Niš
<b>Partners</b>	• City of Niš • Nišava Administrative District • Ministry of Interior– Department for Emergency Situations in Niš • Ministry of Interior– Police Department of Niš • Ministry of Telecommunications and Information Society • Emergency Medical Unit • Faculty of Electronics
<b>Time of realization</b>	2011-2015.
<b>Potential Obstacles to Implementation</b>	Lack of funds
<b>Project Budget</b>	<b>20.000.000 dinars</b>
<b>Financing Sources</b>	• Budget of the Republic of Serbia • Budget of the City of Niš • Foreign donations and funds

## PROJECTS IN THE FIELD OF ECONOMIC SECURITY

*GENERAL GOAL: Increasing the standard of living by creating a more favorable business environment, increasing employment, improving the image of the city and increasing the level of safety at work*

SPECIFIC GOALS	PROJECTS	POSSIBLE PARTNERS	TIME OF REALIZATION
<b>1. CREATING A FAVOURABLE BUSINESS ENVIRONMENT IN THE CITY OF NIŠ</b>	Project: Forming a fund for aid and development of small and medium enterprises	Department of Economy, Sustainable Development and Environmental Protection Chamber of Commerce, Niš University of Niš	2010 – 2011
	Project: Production of health food and medicinal herbs	Urban municipalities (Niška Banja, Medijana, Pantalej, Crveni Krst and Palilula) University of Niš Public Health Institute Department of Economy, Sustainable Development and Environmental Protection Institute for Protection of Nature of Serbia – Department in Niš	2010 – 2015
<b>2. INCEASING EMPLOYMENT</b>	Project: Forming a cluster of producers of equipment for responding in emergency situations	City of Niš University of Niš Ministry of Interior– Department for Emergency Situations in Niš	2011 – 2012
<b>3. IMPROVING THE IMAGE OF THE CITY OF NIŠ</b>	Project: Promoting natural resources of the Niš Spa and Topilo Spa	City of Niš Urban municipalities (Niška Banja and Crveni Krst)	2011 - 2012
	Project: Promoting natural resources of the City of Niš	City of Niš Institute for Protection of Nature of Serbia - Department in Niš Urban municipalities (Niška Banja, Medijana, Pantalej, Crveni Krst and Palilula) University of Niš	2011 - 2012
<b>4. INCREASING THE LEVEL OF SAFETY AT WORK IN THE PRIVATE SPHERE AND IN CITY TRAFFIC</b>	Project: Regulation of city traffic from the aspect of economy, safety and ecology	City of Niš Ministry of Internal Affairs- Traffic Police Urban Municipalities (Niška Banja, Medijana, Pantalej, Crveni Krst and Palilula) University of Niš	2010 - 2011
	Project: Continuous promotion in the area of household activities safety and fire protection	Competent Ministry- Department for Emergency Situations in Niš Faculty of Occupational Safety Radio and TV Stations in the City (NTV, ....) Firefighting Union Voluntary Firefighting Association	2010 - 2015



## PROJECTS IN THE FIELD OF SOCIAL SECURITY

*GENERAL GOAL: Creating favorable conditions for improving the safety of individuals and social groups in the City by satisfying the needs of the citizens, protecting their rights, systematic improvement of educational, healthcare and social policies, family protection and protection of personal safety*

SPECIFIC GOALS	PROGRAM / PROJECTS	POSSIBLE PARTNERS	TIME OF REALIZATION
<b>1. RASING THE LEVEL OF SAFETY AWARENESS</b>	Project: Mapping of public locations with increased risk level	Competent Ministry City of Niš	2010
	Project: Introducing video monitoring of roads and other traffic points	Competent Ministry City of Niš	2010-2011
	Program: Promoting activities from the field of safety	City of Niš Competent Ministry– Niš Police Department Competent Ministry-Department for Emergency Situations in Niš Competent Ministry – Protection of the Environment Public Health Institute Workers’ Healthcare Institute NGO Sport Organizations	2010-2015
	Program: Promoting the significance, role, and function of the safety sector	City of Niš Competent Ministries School Department in Niš University of Niš	2010
	Project: „Avoid risk – learn more and do something for yourself and others“	City of Niš Local media Competent Ministry– Niš Police Department Competent Ministry- Department for Emergency Situations in Niš Work Inspectorate Public Health Institute Workers’ Healthcare Institute	2010-2015
	Project: „You are different b but we are the same“	City of Niš Department of Education NGO	2010-2011
	Program: Significance of preserving fish resources and variety	City of Niš Department of Education Fishing Associations in Niš	2010

<b>2. STRENGTHENING THE MECHANISMS FOR MORE EFFICIENT OPERATION OF THE LOCAL SELF-GOVERNMENT, PARTICULARLY IN THE FIELD OF SAFETY</b>	Project: Introducing a quality system in municipalities	City of Niš Urban municipalities	2011
	Project: Bulletin „Niš – a Safe City“	City of Niš Competent Ministries	2011
	Program: Supporting creation of a network of Non-Governmental Organizations dealing with problems of safety in the City	City of Niš NGO	2010
<b>3. RAISING THE LEVEL OF HEALTH SAFETY AND PUBLIC AWARENESS OF HEALTH RISK FACTORS</b>	Project: Forming mobile teams for health assistance in rural areas	City of Niš Urban municipalities Health Center Center for Home Care	2010
	Project: Opening and equipping health units with pharmacies in rural areas	City of Niš Competent Ministries Urban municipalities Health Center	2011-2015
	Project: Opening and equipping ambulance units in city and rural areas	City of Niš Competent Ministries Urban municipalities	2011-2015
	Building and equipping an Emergency Room within the scope of the Clinical Center	City of Niš Competent Ministries Clinical center of Niš	2014-2015
	Program: Organizing campaigns for prevention of addiction	Health Protection Institute Department of Education Non-Governmental Organizations	2010-2015
	Project: Opening hospices for patients in terminal phase of cancer and those suffering from stroke	City of Niš Competent Ministries Urban municipalities Health Center	2012
	Program: Supplemental education, re-qualification and employment of rehabilitated addicts and addicts returning after serving prison sentence	City of Niš Police Department of Niš Center for Social Work People's University	2011
	Project: Opening centers for therapy of mental disorders within the community (with community health teams) organized by territorial principle within the urban municipalities	City of Niš Urban municipalities Mental Health Clinic NGO	2011-2015

	Project: Forming crisis teams for the prevention of reactive psychological disorders in emergency situations and situations of prolonged economic crisis	City of Niš Urban municipalities Mental Health Clinic NGO	2010
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<b>4. RAISING THE LEVEL OF SAFETY IN EDUCATIONAL INSTITUTIONS</b>	Project: Study of improvement of operation of schools and safety of children and employees	City of Niš Department of Education	2010
	Program: Preventing asocial behavior of children in pre-school institutions	City of Niš „Pčelica“ Center for Social Work	2011
	Project: Forming a data base of children with disturbed behavior and special needs	City of Niš Urban municipalities Department of Education Mental Health Clinic NGO	2010
	Program: Protection of children from violence	City of Niš Urban municipalities Department of Education Mental Health Clinic Center for Social Work NGO	2011
	Project: Forming peer teams for protection and peer support	City of Niš Department of Education Faculty of Philosophy NGO	2010
	Project: Broadening the school policeman network	City of Niš Department of Education Competent Ministry-Niš Police Department	2010
	Project: Introduction of security cameras in schools and universities	City of Niš Department of Education	2010
	Project: Sport as a means of combating violence in schools	City of Niš Department of Education Sports Associations NGO	2010
<b>5. DECREASING POVERTY AND INCREASING CARE FOR MARGINALIZED SOCIAL GROUPS</b>	Program: Opening new work places through stimulative measures for acceptance of new workers	City of Niš	2010-2011
	Project: Forming a service for helping the old, ill and weak	City of Niš Clinical Center of Niš Home Care Center Foreign partners	2010-2012
	Project: Improving qualifications of the unemployed through re-	City of Niš National Employment Bureau – Niš Association of Craftsmen	2011-2013

	qualification and supplemental education		
	Program: Introduction of jeopardized groups into the formal education system, especially the Romani population	City of Niš Department of Education Center for Social Work NGO	2010-2015
	Project: Revival of abandoned rural households	City of Niš Urban municipalities	2013-2015
	Project: Construction of social apartments and subvention of living costs	City of Niš Urban municipalities	2013-2015
	Project: Re-qualification and supplemental education of Romani people for scarce jobs	Urban municipality Crveni Krst Center for Social Work – Niš Local Economic Development Office Business Sector People's University National Employment Office – Niš	2012-2015
	Project: Forming a fund and professional teams for care of those formally employed in state and public companies	City of Niš Urban municipalities	2011-2012
	Project: Transport services for handicapped people and enabling access to objects of public significance	Urban municipalities Association for helping developmentally challenged persons City Associations of people with disabilities	2011- 2015
	Home help for the elderly	City Parliament Urban municipalities Health Center Center for Home Care Labor Market	2011-2013
	Project: Sign language interpreters in public departments	City of Niš Urban municipalities	2010
<b>6. STRENGTHENING THE MECHANISMS FOR PREVENTING AND FIGHTING ALL FORMS OF CRIME</b>	Project: Forming a reception center for the purpose of combating illegal migration	City of Niš Competent Ministry- Police Department in Niš	2012-2013
	Project: Establishing an integrated call center within the Police Department	City of Niš Competent Ministry- Police Department in Niš	2011
	Program: Monitoring inclusion into society of people that have served a prison sentence	City of Niš Competent Ministry- Police Department in Niš Center for Social Work	2013-2014
	Program: Monitoring juvenile delinquency	City of Niš Competent Ministry- Police Department in Niš	2010-2015
	Project: Advisory center for combating domestic violence and violence against old people	City of Niš Competent Ministry- Police Department in Niš Center for Social Work NGO	2011-2012

	Project: Reception center for street children and their education	City of Niš Competent Ministries Center for Social Work National Employment Office People's University	2011
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## PROJECTS IN THE FIELD OF ECOLOGICAL SECURITY

*GENERAL GOAL: Improving the quality of the environment in accordance with principles of sustainable development*

SPECIFIC GOALS	PROGRAM / PROJECTS	POTENTIAL PARTNERS	TIME OF REALIZATION
<b>1. IMPROVING THE SYSTEM OF PROTECTION AND MONITORING ENVIRONMENTAL CHANGES AND INFORMING THE PUBLIC</b>	Project: Protection from ionizing and non-ionizing radiation on the territory of the City of Niš	City of Niš Competent Ministries University in Niš Ministry of Defense	2011
	Project: Center for Monitoring of the Environment	City of Niš University of Niš Center for Consumer Protection Non-Governmental Organizations	2013
	Project: Constructing a web portal that would be intended for reporting and informing the public of the status of the environment	City of Niš University of Niš	2011
	Project: Promoting the concept of healthy living	City of Niš Niš Workers' Healthcare Institute Health Care Institute in Niš	2011
	Project: Monitoring the effect of noise on the health of the exposed population	City of Niš Faculty of Occupational Safety Health Care Institute in Niš Workers' Healthcare Institute in Niš	2012 – 2013
	Project: Monitoring the acute effect of aeropollution on the health of the exposed population	City of Niš Health Care Institute in Niš	2012 – 2013
	Project: Monitoring of	City of Niš	2011 -2013

	agricultural products on green markets and in supermarkets	Health Care Institute in Niš Center for Consumer Protection	
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<b>2. SETTING UP AN INTEGRATED WASTE MANAGEMENT AND DUMP SANATION SYSTEM</b>	Project: Construction of a regional sanitary dump	City of Niš Competent Ministries Public Utilities Company "Medijana"	2011-2015
	Project: Waste Management Strategy (medical, communal)	City of Niš Public Utilities Company "Medijana" USAID	2011
	Project: Education on Treatment of Medical Waste	Clinical Center of Niš Faculty of Occupational Safety	2011
	Project: Creating a local strategic plan for waste management	City of Niš Competent Ministries Public Communal Company "Medijana" USAID	2012.
	Project: Rehabilitation of existing dump	City of Niš Competent Ministries Public Communal Company "Medijana" USAID	2010-2012
	Project: Construction and placement of "recycling islands"	City of Niš Competent Ministries Public Communal Company "Medijana" USAID	2011
	Project: Construction and placement of "recycling yards"	City of Niš Competent Ministries Public Utilities Company "Medijana" USAID	2011
	Project: Promotion and education of the population on recycling of household waste	City of Niš Faculty of Occupational Safety Public Utilities Company "Medijana"	2011
	Project: Modernizing and reconstruction of recycling center at the location in Ivana Milutinovića St.	City of Niš Competent Ministries Public Utilities Company "Medijana"	2011-2012
	Project: Modernizing of car pool by application of motor with ecologically acceptable fuel	City of Niš Competent Ministries Public Utilities Company "Medijana"	2012-2013
	Project: Vehicle supervision via GPS/GSM system, vehicle monitoring and construction of monitoring center.	City of Niš Competent Ministries Public Utilities Company "Medijana"	2012-2013

	Project: Forming underground container system	City of Niš Competent Ministries Public Utilities Company "Medijana"	2013
	Project: Improving waste management and including Romani people the waste management process	City of Niš CEB Bank Public Utilities Company "Medijana" Sustainable Development Office of the Republic of Serbia	2010-2011
	Project: Creating a regional strategic waste management plan	City of Niš Competent Ministries Public Utilities Company "Medijana" USAID	2010-2013
	Project: Recycling of metal and plastic waste	City of Niš, Environmental Protection Fund Swiss Embassy	2010

<b>3. SUSTAINABLE EXPLOITATION AND PROTECTION OF LAND, NATURAL RESOURCES AND BIODIVERSITY</b>	Project: Creating a map of landslides on the territory of the city	City of Niš Department for Urban Development in Niš Agricultural Department of the City of Niš	2012
	Project: Creating a study of anti-erosion protection of the land	City of Niš Department for Urban Development in Niš Agricultural Department of the City of Niš	2013
	Project: Declaring natural resource zones – areas	City of Niš Department for Urban Development in Niš Competent Ministries	2013
<b>4. PRESERVATION OF WATER SUPPLY SOURCES, SUSTAINABLE EXPLOITATION OF THE WATER SUPPLY SYSTEM, AND PROTECTION OF THE WATERCOURSES</b>	Project: Constructing of a waste water treatment system of the City of Niš	City of Niš Competent Ministries Public Utilities Company "Naissus"	2011-2014
	Project: Water quality management	City of Niš Competent Ministries University of Niš Faculty of Civil Engineering Public Utilities Company "Naissus"	2011-2012
	Project: Testing dump drainage water quality	City of Niš Health Care Institute in Niš Public Utilities Company "Medijana"	2011-2013
	Project: Testing waste water	City of Niš	2011-2013

	quality in the Brzi Brod settlement and its effect on the part of the Nišava watercourse used for water supply	Health Care Institute in Niš Public Utilities Company "Naissus"	
	Project: Establishing an integrated system of surface water monitoring and quality control – the river Nišava from its entrance into the Republic of Serbia to its inflow into the J. Morava and its tributaries	City of Niš Health Care Institute in Niš University of Niš Public Utilities Company "Naissus"	2011-2012
	Project: Developing an integrated system for monitoring waste waters of all polluters	City of Niš Health Care Institute in Niš University of Niš Public Utilities Company "Naissus"	2012
	Project: Establishing an integrated system of drinking water quality control in all water catchments, public fountains in the City and in rural areas	City of Niš Health Care Institute in Niš University of Niš Public Utilities Company "Naissus"	2010-2011
	Project: Educating the population in respect of rational water usage	City of Niš University of Niš Public Utilities Company "Naissus" NGO	2010-2011
<b>5. ADVANCEMENT OF REMOTE HEATING AND CONNECTION TO THE GAS NETWORK, APPLYING THE PRINCIPLE OF ENERGETIC EFFICIENCY AND USE OF ALTERNATIVE ENERGY SOURCES</b>	Project: Use of renewable energy sources and increase of energetic efficiency	City of Niš Faculty of Occupational Safety Faculty of Mechanical Engineering Agency for Energetic Efficiency	2012-2013
	Project: Measuring heating energy expenditure in apartments a	City of Niš Public Company City Heating Plant Public Company „Niš stan“	2012
	Project: Complete gasification of Niš	City of Niš	2014



## PROJECTS IN THE FIELD OF SAFETY IN EMERGENCY SITUATIONS

*GENERAL GOAL: Creating an integrated emergency management system which contributes to higher safety and lowering the risk of technical and technological, natural and anthropogenic influences*

SPECIFIC GOALS	PROGRAM / PROJECTS	POTENTIAL PARTNERS	TIME OF REALIZATION
<b>1. CREATING AN INTEGRATED EMERGENCY MANAGEMENT SYSTEM</b>	Program: Development of protection and rescue system on the territory of the City	City of Niš Nišava Administrative District Ministry of Interior– Department for Emergency Situations in Niš Serbian Armed Forces Faculty of Occupational Safety	2011
	Project: Preparing a Plan for protection and rescue in emergency situations	City of Niš Nišava Administrative District Ministry of Interior– Department for Emergency Situations in Niš Serbian Armed Forces Emergency Medical Unit Public Health Institute in Niš Red Cross Public companies	2011
	Project: Forming a mobile ecotoxicological laboratory	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Health Institute in Niš	2011-2012
	Project: Constructing a DNA laboratory	City of Niš Faculty of Medicine Public Health Institute in Niš	2011-2012
<b>2. CREATING AN INTEGRATED INFORMATION AND COMMUNICATION SYSTEM FOR EMERGENCY MANAGEMENT</b>	Project: Reengineering of the Situation Center	City of Niš Nišava Administrative District Ministry of Interior– Department for Emergency Situations in Niš Ministry of Interior– Police Department in Niš Ministry of Telecommunications	2010-2012

		and Information Society Emergency Medical Unit Faculty of Electronics	
	Program: Developing a Call Center	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Ministry of Telecommunications and Information Society Faculty of Electronics	2010-2012
	Project: Introduction of GPS system	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Ministry of Telecommunications and Information Society Faculty of Electronics	2013
	Program: Equipping protection and rescue entities with modern information and communication technology	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Ministry of Telecommunications and Information Society Faculty of Electronics	2010-2013
<b>3. PROVIDING THE NECESSARY CONDITIONS FOR THE MORE EFFICIENT FUNCTIONING OF THE PROTECTION AND RESCUE SYSTEM AT THE CITY LEVEL</b>	Program: Equipping protection and rescue entities with emergency situation equipment	City of Niš Nišava Administrative District Ministry of Interior– Department for Emergency Situations in Niš	2011-2015
	Project: Reengineering of the alarm system	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Faculty of Electronics	2010-2011
	Project: Forming a territorial network of firefighting stations	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Faculty of Occupational Safety Firefighting Union Voluntary Firefighting Association	2011-2015
	Project: Forming a territorial network of Police Department substations	City of Niš Ministry of Interior – Police Department in Niš	2011-2015
	Project: Forming a territorial network of emergency medical stations	City of Niš Emergency Medical Unit	2011-2015
	Project: Extension and reconstruction	City of Niš	2011-2012

	of the Firefighting Home	Ministry of Interior– Department for Emergency Situations in Niš Faculty of Civil Engineering	
	Project: Construction of field for destruction of unexploded ordnance	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Serbian Armed Forces Urban Construction Administration	2012-2014
<b>4. IMPROVING THE PREVENTION OF EMERGENCY SITUATIONS</b>	Project: Assessment of jeopardy	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Ministry of Environmental Protection and Spatial Planning Faculty of Occupational Safety	2010-2011
	Project: Creating a Cadastre of Flood Areas	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Waterworks Company „Srbijavode“	2010
	Project Creating a Landslide Cadastre	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Waterworks Company „Serbia Waters“	2010
	Project: Creating a Cadastre of Erosive Areas	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Waterworks Company „Serbia Waters“	2010
	Project: Creating a map of hazards	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Faculty of occupational Safety	2010-2012
	Project: Regulating riverbeds of torrential watercourses	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Waterworks Company „Serbia Waters“	2011-2012
	Project: Development of alternative water supply capacities	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Public Company „Naissus“	2011-2014

		Niš	
<b>5. IMPROVING EDUCATION, TRAINING AND INFORMING</b>	Program: Development of program for education of children, youth and citizens in the field of emergency situations	City of Niš Faculty of Occupational Safety Faculty of Medicine Ministry of Interior– Department for Emergency Situations in Niš Emergency Medical Unit Red Cross	2010-2011
	Project: Educational Workshops	City of Niš Voluntary Firefighting Association City Firefighting Union Faculty of Occupational Safety Faculty of Medicine	2011
	Project: Construction of regional training center for protection and rescue	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Serbian Armed Forces Department for Urban Development	2011-2015
	Program of specialist courses and training for employees in protection and rescue departments	City of Niš Ministry of Interior– Department for Emergency Situations in Niš	2010
	Project: Improving information on emergency situations	City of Niš Ministry of Interior– Department for Emergency Situations in Niš Faculty of Occupational Safety	2011



**ANNEXES**





## **PROJECT PROPOSAL**

The public debate on the draft Safety Strategy was held in the period from 5 May until 13 May 2010, as follows: Urban municipality Medijana and Urban municipality Pantalej on 5 May 2010, Urban municipality Crveni Krst and Urban municipality Palilula on 6 May 2010, Urban municipality Niška Banja on 10 May 2010, and the City Assembly on 13 May 2010.

At the public debates, suggestions for additional projects and programs were made, which are an integral part of Annex 1, as well as the suggestion for the following project:

### **STRENGTHENING PARTNERSHIP AND DEFINING ITS MECHANISMS FOR THE PURPOSE OF MANAGING THE PROJECT CYCLE – MANAGING PROJECT IMPLEMENTATION WITHIN THE STRATEGY**

PURPOSE OF THE PROJECT	<ul style="list-style-type: none"> <li>• Forming work groups and concrete partners for implementation of specific projects</li> <li>• Defining partner roles and responsibilities</li> <li>• Identifying existing capacities in all sectors</li> <li>• Defining necessary criteria for participation in project management</li> <li>• Stimulating activist and volunteer work</li> <li>• Participation of a larger number of stakeholders</li> </ul>
PARTNERS	<ul style="list-style-type: none"> <li>• Local self-governments – project teams</li> <li>• Representatives of local self-government</li> <li>• Specialized agencies or organizations for specific fields</li> <li>• Institutions of higher education, depending on the project field.</li> </ul>
TIME OF REALIZATION	2010

## **PROJECTS IN THE AREA OF ECONOMIC SECURITY**

<b>SPECIFIC GOALS</b>	<b>PROGRAM / PROJECTS</b>	<b>POTENTIAL PARTNERS</b>	<b>TIME OF REALIZATION</b>
<b>2.INCREASE OF EMPLOYMENT</b>	Revival and formation of companies for hiring handicapped persons	City of Niš	2012-2015
<b>3.IMPROVING THE IMAGE OF THE CITY OF NIŠ</b>	Health tourism	Urban municipality Niška Banja City of Niš Touristic Organization of Niš	2010-2015
	Project: Christianity through the ages/MILAN EDICT	NTV City of Niš	2010-2013
	Project: Rain Around Niš (Okolo Niša kiša)	NTV City of Niš Touristic Organization of Niš	2010-2013



## PROJECTS IN THE AREA OF SOCIAL SECURITY

SPECIFIC GOALS	PROJECTS	POTENTIAL PARTNERS	TIME OF REALIZATION
1. RAISING THE LEVEL OF SAFETY AWARENESS	Assessing the quality of life of the citizens of Niš	Faculty of Medicine in Niš Health Care Institute in Niš Faculty of Philosophy in Niš Faculty of Occupational Safety in Niš	2010
3. RAISING THE LEVEL OF HEALTH SAFETY AND PUBLIC AWARENESS OF HEALTH RISK FACTORS	Reception center for stray dogs	City of Niš	2010-2015
	Project: Face and reverse - documentary film and media campaign on prevention of breast cancer	NTV City of Niš Institute for Oncology	2010 /2011
5. DECREASING POVERTY AND INCREASING CARE FOR MARGINALIZED SOCIAL GROUPS	Organized procuring of food for older households in rural areas	City of Niš Urban municipalities	
	Project: Improving living conditions in the Šljaka settlement		

## **PROJECTS IN THE FIELD OF ECOLOGICAL SECURITY**

<b>SPECIFIC GOALS</b>	<b>PROJECTS</b>	<b>POTENTIAL PARTNERS</b>	<b>TIME OF REALIZATION</b>
<b>1. IMPROVING THE SYSTEM OF PROTECTION AND MONITORING OF ENVIRONMENTAL CHANGES AND OF INFORMING THE PUBLIC</b>	Project: Eco stories	NTV City of Niš Ministry of Education Ministry of Environmental Protection and Spatial Planning	2010/2011
<b>4. PRESERVATION OF WATER SUPPLY SOURCES, SUSTAINABLE EXPLOITATION OF THE WATER SUPPLY SYSTEM, AND PROTECTION OF THE WATERCOURSES</b>	Project: Register of Water Sources	City of Niš Public Utilities Company "Naissus" Public Company Srbijavode	2010-2011

## PROJECTS IN THE FIELD OF SAFETY IN EMERGENCY SITUATIONS

SPECIFIC GOALS	PROJECTS	POTENTIAL PARTNERS	TIME OF REALIZATION
<b>1. CREATING AN INTEGRATED EMERGENCY MANAGEMENT SYSTEM</b>	Project: Study of existing capacities of institutions for emergency situation response	City of Niš Red Cross Voluntary Firefighting Association	2010-2011
<b>4. IMPROVING THE PREVENTION OF EMERGENCY SITUATIONS</b>	Program: Increasing the number of voluntary firefighting associations	Voluntary Firefighting Association City Firefighting Union	2010
	Project: Defining fire escape routes in zones of block residences	Competent Ministry- Department for Emergency Situations in Niš Voluntary Firefighting Association City Firefighting Union	2010-2011
<b>5. IMPROVING EDUCATION, TRAINING AND INFORMING</b>	Project: Program of education and training of building resident assemblies in the field of fire prevention	Competent Ministry- Department for Emergency Situations in Niš Voluntary Firefighting Association City Firefighting Union	2010-2015

## ANNEX 2 : RESPONSIBILITY FOR REALIZED LEVEL OF SAFETY IN THE CITY

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